COMPUTERWORLD

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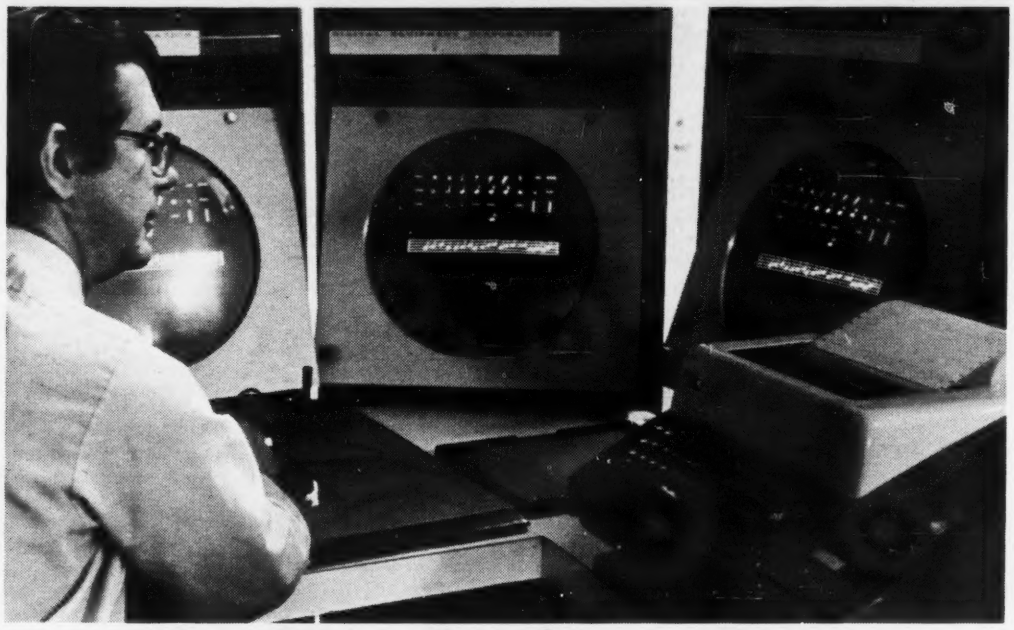

Not Quite Beethoven But...

Harvard University Mathematics Professor William Bossert composes music at the university's new Center for Research in Computing Technology. Notes are moved with a Graficon tablet on the desk, and displayed on the CRT screens. After he punches a button that feeds the notes into a PDP-1, linked to a PDP-10, he then hears the music played back.

FBI 'Looks at' Plan

Criminal Data Satellite Due?

By E. Drake Lundell Jr. and
Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – Plans to transmit computer-based criminal information by an experimental satellite are being considered by the FBI here with the backing of the National Aeronautics and Space Administration.

While no formal proposal for a law enforcement experiment has been made, *Computerworld* has learned the FBI is definitely "looking at" the project and Nasa officials would "like to see" such an experiment included with the upcoming Applications Technology Satellite (ATS-F), which will handle several applications.

CW also learned that another proposal to launch a satellite dedicated strictly to law enforcement uses is being considered.

Election Gimmick?

The ATS-F experiment may be one of several on the "bird" designed to show how technology can serve civilian needs in education, health and law enforcement, and as such may be a major part of the Nixon Administration's reelection strategy.

While administration sources are willing to talk about the experiments in the educational and health fields proposed for ATS-F, they are reluctant to give details on the proposed law enforcement portion of the program.

"We are looking at the most economical ways to transmit data," a source at the FBI's National Crime Information Center said.

That may well involve the transmission of NCIC information from the central computer site to state and regional computer systems or terminals, he added.

"We expect the ATS-F experiments to include the transmission of computer data between various computer centers, which would be useful to the law enforcement community," a source at Nasa admitted.

But, while Nasa "would like to see" such experiments and has held discussions with the FBI and the Law Enforcement Assistance Administration (LEAA) about them, "no formal proposals have been made," he stated.

Since there is as yet no formal proposal for the project, the FBI could not discuss what possible security measures would be used to protect sensitive data sent over the satellite link.

"Of course, security considerations will be very important," a spokesman said.

Receiving equipment to monitor satellite transmissions is commercially available from many worldwide sources, according to a spokesman for a satellite consulting firm.

"Sensitive receivers are required to pick up the low output of the satellites," he said, "but the key to detecting criminal record checks would lie with the type of code being used."

If the criminal data were transmitted with a sophisticated coding scheme, it would be difficult for unauthorized eavesdroppers to detect, the consultant said.

Dedicated Proposal

The proposal for a satellite dedicated to law enforcement uses could well come at the end

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SRI Researcher Says

Danger of Magnets To Tape 'Hogwash'

By Frank Piasta
Of the CW Staff

MENLO PARK, Calif. – The danger of having a tape library wiped out by an intruder carrying a concealed magnet has been grossly exaggerated, in the opinion of researchers at the Stanford Research Institute (SRI).

The stories that have gained circulation – the workman who erased all the magnetic tapes in a cabinet by placing his magnet-equipped flashlight on the cabinet, or the repairman who had a small magnet in his pocket (in some versions in his tool box) are just "hogwash," according to W.D. Tiffany, manager of the Security Systems Research Program at SRI.

Tests Conducted

Tests conducted at SRI by Tiffany and his associates have tried unsuccessfully to duplicate conditions under which the tape files had reportedly been erased. They are currently trying to contact someone with accurate information about such an occurrence.

This is not to say that magnets cannot erase tapes. A man carrying a 100-lb magnet in a tape library, for example, could do considerable damage, but would scarcely go unnoticed, Tiffany said.

A lockable steel cabinet, in Tiffany's opinion, is adequate protection in most cases.

Even if a very strong magnet were used on the outside of the

(Continued on Page 4)

Strong Response Marks Computer User Forums

BOSTON – Advance registration for the first Computer Users' Forum and Exposition, to be held here next week, indicates strong user interest in the new idea, forum officials said last week.

As of Thursday, 327 users had signed up for the Boston Forum, the first of nine to be held by *Computerworld,* said Edward J. Bride, forum coordinator.

Users are also signing up for the other eight locations, he added. New York, the second city on the schedule, had 150 advance registrants.

The program consists of a keynote session, panel discussion and workshop on one specific topic for each of the three days, in the following order: data entry, data communications, operational efficiency.

After the workshops and a luncheon, an exhibit hall will be open.

While many users are well-acquainted with problems in the first two subject areas, the third-day program will cover a wide range of management initiatives, according to keynoter Charles P. Lecht.

Panelists will outline their innovations and experiences with core extensions, independent peripherals, system software and "dedicated vs. general purpose systems," after Lecht has discussed the overall problems of measuring and improving systems performance.

Forum admission is $25 for one day, $45 for two days, and $60 for all three days.

Admission fees include all conference materials and the luncheon, during which the nationally known keynote speaker will summarize the earlier events.

Forum registration commences at 8 a.m. Tuesday and, except for the advance registrants, will be handled on a first-come, first served basis. Exhibit-only admission is $5, for all three days.

Computer 'Accomplice' In Thefts

By Marvin Smalheiser
CW Correspondent

LOS ANGELES – The 21-year-old president of a Los Angeles communications equipment firm was arrested last week for allegedly stealing nearly $1 million worth of Pacific Telephone Co. supplies by cracking the code for the company's computerized ordering system.

According to Ronald Maus, an investigator for the district attorney's office, Jerry Neal Schneider was able to tap into the Pacific Telephone computer center with a Touch-Tone telephone to place large orders for equipment with the phone company's central supply division.

These computer-generated orders would then be sent to telephone company docking areas throughout Los Angeles counties and placed on shipping platforms.

Schneider, president of Los Angeles Telephone and Telegraph Co. in West Los Angeles, was released in $2,500 bail and

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On the Inside

'Instant Transaction System' Facilitates Transfer of Funds

By Don Leavitt
Of the CW Staff

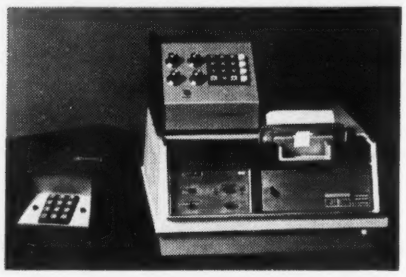
BOSTON – An electronic funds transfer system has been successfully moved out of the study stage and is ready for installation into banks and other DP utilities.

The Instant Transaction (IT) system, developed by the Hempstead Bank, Hempstead, N.Y., is now transferring funds between accounts on the bank's data files, based solely on entries at point-of-sale terminals.

No paper processing is required once a transaction has entered the IT system, but memoes for both merchant and customer are printed so that they will have records of the transaction.

Designed to provide positive customer identification, "zero floor limit" authorization and elimination of paper processing, the system was described by a bank representative at the meeting of the National Association of Mutual Savings Banks (NAMSB) here.

The news from Hempstead "seemed to leap-frog the entire generation" of unmanned banking equipment and credit authorization terminals, even while still under development, according to Dale Reistad, president of Payment Systems Inc.



The present IT terminal equipment includes a verifier unit, printer and card reader. Transaction codes are entered by the lower set of knobs on the card reader.

The IT system has been in use in Syosset, N.Y., since October and the bank refuses to consider this limited operation a field test. The system is available for other banks or computer utilities to install "across the country," the bank said.

The special card used by the IT terminal is the basis for the positive customer identification feature. In addition to an account number to validate his use of the card, the customer must key into a verification unit, a three-digit code given him when the card was issued. The card reader compares the keyed code to one embedded in the card, and unless they match, the transaction is terminated.

The card reader also includes a standard 12-button Touch-Tone keyboard, used primarily to enter the amount of the transaction. Four rotary switches on the unit are used to define "semi-fixed" data including clerk or department identification and type of transaction.

This choice of transaction type gives IT its flexibility. The normal use of the terminal is for immediate purchases, in which funds, if available, are transferred from the buyer's checking account or line of credit, to the merchant's account. But the unit can also handle delayed payment transactions, in which the merchant gets his funds immediately – but they are not taken from the buyer's account for 35 days.

The system also allows the merchant to cash a card holder's check with the assurance that funds to cover the check have "already" been moved to his account.

Money can also flow the other way, in case of a return of merchandise, for example. Such a transfer of funds from the merchant's account to the customer's suggests that the IT system could be used as a depository for the bank, but banking laws thus far prohibit this extension of the system, Hempstead said.

The software for the IT system was designed to be independent of the accounting systems of the subscribers, thus enabling many banks or card issuers to participate in a computer utility implementation of the system.

Each morning the subscribers would transmit or otherwise provide the utility with a file containing account numbers and available funds for each card holder. "Available funds" might be any combination of balances or lines of credit defined by the subscriber, the bank noted.

In this multi-subscriber situation, only the file at the host or utility computer site would be processed and updated as transactions were received. Transaction records would be written on tape for return to the subscriber each evening.

Data Recall Users Lose IBM Maintenance

WHITE PLAINS, N.Y. – Users of Data Recall 360/30 core extension memories beyond 64K are being told by IBM that their CPUs are no longer going to be maintained by IBM.

The users were told that because of the CPU wiring changes made by Data Recall "it is not practical for an IBM customer engineer with standard training and experience on a Model 30 to maintain" their "substantially altered" machines.

IBM has told a user of a leased machine that he would have to disconnect the memory. Users of purchased systems were advised that they will "need to arrange to have the 30 CPU maintained by others who may have training and experience on its servicing requirements in its redesigned configuration."

The Data Recall memories may not be the only ones affected in what could be an IBM effort to remove core extensions from its systems. At least two other manufacturers have been advised their installations were being inspected. "It's probably only a matter of time until we receive the warning letter," a spokesman for one said.

Although IBM said it is inspecting each site before a determination of practicality of maintenance is made, one Data Recall user-to-be was advised on the eve of installation that his processor would be off maintenance as soon as the memory was attached.

Both Data Recall and some of its users have said they are making accommodations to meet IBM demands. A user said his processor will be serviced by IBM on a time and materials basis until June when matters are expected to be resolved between the two companies.

Criminal Data Satellite Due?

(Continued from Page 1)

of this month from the California Crime Technical Research Foundation, which has been conducting satellite experiments under Project Search sponsored by LEAA.

The group is presently evaluating experiments carried out over ATS-I last year in which fingerprints were sent by facsimile over the satellite link and "simulated" rap sheets were sent back.

"I think we will probably recommend the launching of a satellite dedicated to criminal justice work," a source inside the agency said, "after we have completely evaluated the results from our first tests."

The dedicated satellite, sources said, would carry all kinds of criminal information, from fingerprint facsimiles to data from the NCIC computer center here if the project is approved.

It would reduce the costs of the present system where state and local police agencies are tied into NCIC computers by land lines, sources added, and would permit faster response for requests for information.

Whether or not the extremely sensitive data found in the FBI's Computerized Criminal History file would be allowed on a satellite could not be answered.

But it seems likely that this information would be included if the rest of the NCIC data were allowed to go over the link, because that would offer the most economical method of transmitting such information from the Washington center to the outlying police jurisdictions.

The Nixon Administration is expected to make big headlines from the advantages of ATS-F experiments, probably shortly after the bird is launched this March – in the middle of its re-election campaign, sources here said.

The administration is expected to proclaim how beneficial are the education and health experiments in ATS-F (which will be renamed ATS-VI if the launch is successful) to the general public.

It is also expected to use the crime experiments – if approved – as part of its "law and order" posture by showing how technology – such as computers and satellites – can be linked to speed the "fight against crime," Washington sources said.

Thefts Have 'Accomplice' in Computer

(Continued from Page 1)

will appear Feb. 17 for a preliminary hearing on charges of grand theft, burglary and receiving stolen property.

Schneider, who lives in Topanga, surrendered to authorities last week at his home following a search by investigators at his firm. An estimated $100,000 in stolen equipment was found in the firm's warehouse, according to Maus.

Schneider was said to have been involved in the thefts off and on since 1968, according to the district attorney's office. The thefts involved all types of electronic gear used by the telephone company.

Schneider and associates allegedly obtained keys to the docks and would drive in with a truck to steal the loads before the warehouse crews arrived at 6:30 a.m.

The shipments apparently were never missed because Schneider also picked up the bills of lading, investigators said.

Schneider's customers, investigators said, included businesses which purchased specialized telephone equipment, especially console type telephone systems.

Schneider had 10 full-time employees working for him at his firm which was organized last September. He previously operated Creative Systems at 5016 E. Olympic Blvd., an electronics supply company.

The district attorney investigators said the investigation and arrest resulted from reports by customers of large amounts of Pacific Telephone equipment at the warehouse.

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Magnet Danger Called 'Hogwash'

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cabinet, only a trace would appear inside, he said.

He pointed out that it takes a field of 250 gauss to affect a tape, according to manufacturers such as 3M and Ampex. This amount would be needed directly at the surface of the tape, because the proximity of the tape to the magnetic source is very critical.

The reluctance of a magnet is inversely proportional to the cube of the distance from the affected surface. In other words, doubling the distance reduced the power of a magnet by a factor of eight. Even the thickness of a standard tape reel case is enough to prevent the vast majority of readily available magnets from affecting the tape, in Tiffany's opinion.

There are special-purpose magnets that could be used, Tiffany admitted, but they would have to touch the surface of the tape to have any real effect. This might be rather difficult to do covertly.

The proper protection for a computer installation, Tiffany said, should depend more on people control and locked doors rather than concern for magnets.

N.Y. Leans to Regional Centers

ALBANY, N.Y. – The State University of New York (Suny) is looking to regionalized DP centers to satisfy increasing demand by research and academic units within the statewide educational system.

Citing the needs of upgraded facilities and compatibility between various information systems, Harold Wakefield, vice-chancellor of computing, said he thinks regionalized centers should be the answer.

Plans are under way for a regionalized center in Rochester as a "guinea pig." The center, in addition to serving two state campuses, might also include eight private colleges in the area.

The university has upgraded 10 installations with Burroughs B3500s. On Long Island, DP facilities of Brooklyn Polytech and Stonybrook were consolidated by downgrading a 360/67, removing a 360/50, keeping a 360/20 and installing a PDP-10, for a savings of "about $300,000."

Although he admitted that facilities for Brooklyn were not as extensive as with the full 360/67, Wakefield said budget considerations were the primary factor.

But in setting up other regional centers, Wakefield anticipates being able to offer a broader range of services, as "everybody wants something different."

At present, the university has been unable to expand DP facilities on some campuses, he said, but added regional centers should solve this problem.

News Wrapup

House Kills Bid for Privacy Panel

WASHINGTON, D.C. – The House defeated a proposal to establish a Select Committee on Privacy, Human Values and Democratic Institutions by a vote of 216 to 168 last week.

-One of the major purposes of the group proposed by Rep. Cornelius E. Gallagher (D-N.J.) would have been to look into the data bank activities of various governmental agencies and private organizations to spotlight abuses of individual privacy.

Since Gallagher's Subcommittee on Privacy was abolished several years ago by the Committee on Government Operations, the House has not had a formal committee devoted exclusively to privacy matters.

IBM's Learson to Keynote Spring Joint

MONTVALE, N.J. – "There can be no doubt about his unique qualifications or his position of leadership in this industry," said Keith Uncapher in announcing the keynote speaker for the Spring Joint Computer Conference.

T. Vincent Learson, chairman of the board of IBM, will deliver the opening address at the conference, to be held in Atlantic City May 16-18.

The rare public appearance comes at a "crossroad in our industry's relatively short history," noted Uncapher, president of the American Federation of Information Processing Societies, sponsor of the joint computer conferences.

Measurement Patent Given Boole & Babbage

CUPERTINO, Calif. – Another software patent has been granted, the second known for a proprietary product, and, according to the inventors, the first involving the measurement of computer performance.

Boole & Babbage, Inc. has been notified by the U.S. Patent Office that a patent will soon be issued for the company's measurement techniques used in its Problem Program Evaluator and Configuration Utilization Evaluator products.

The patent covers a "method for measuring performance of a general purpose digital computer," a company spokesman related.

The company said as many as 15,000 computer sites could use the products, which are available for IBM 360 and 370 users under OS and DOS, and for the MP65, as well as CDC 3300 and 3500 users and some RCA Spectra 70 users.

The product is already in use at about 400 sites, a spokesman stated.

Programmers, Analysts Not Professionals

WASHINGTON, D.C. – Computer programmers and analysts are not professionals and therefore deserve overtime pay for time worked over minimum standards, according to the Department of Labor's Wage and Hour Division.

The recent ruling, the result of hearings held last year [CW, Feb. 17, 1971], said programmers and analysts were not exempt from the Fair Labor Standards Act.

At the hearings last year, Adapso and the Association of Computer Programmers and Analysts had pushed for exemption from the act because programmers were professionals.

ACM had suggested that salary should be used as the basis of determining a professional, at least temporarily, with all those making over $10,000 per year exempt from the regulations in the act.

But the Wage and Hour Division rejected these arguments in making its decision.

Austerity Program Foils Machine's Efforts

COLUMBUS, Ohio – Because data processing is not self-sufficient, many times it needs the cooperation of humans to accomplish its task. This was made clear recently when the Ohio Bureau of Motor Vehicles started to cut down the enormous backlog of unfiled documents only to be hampered by staff reductions during the governor's austerity program.

"We had reduced the backlog to about 30,000 documents. But then the austerity program hit us, and the number of persons preparing records for filing was reduced from 18 to three," according to C. Donald Curry, registrar of the bureau.

In the next couple of months, he said, the backlog grew to about 700,000 records. We're starting to get people back on the job and we believe the backlog has peaked," he reported.

The bureau was also hampered by inaccurately typed abbreviations and wrong registration numbers disagreeing with ones already in the files.

"The computer does what it is supposed to do. Our problem is getting people to prepare correct information for the computer," he said.

Workers Taken Ill After Drinking Coffee

SANTA MONICA, Calif. – Five employees became ill while drinking coffee in the Allied Computer Technology, Inc. employee coffee room and it was feared at first that the coffee was spiked with an LSD-like substance.

Three of the five employees were treated at the Santa Monica Hospital but all were back to work the next day.

Police said no traces of drugs were found in the coffee. Tests were being made of sugar, cream and utensils for traces of drugs.

The firm makes computer performance monitors.

Government Probes Concluding

British Census Arrests May Renew Data Bank Issue

By Joseph Hanlon

Special to Computerworld

LONDON – Ian Dallison will go to jail for 60 days for refusing to fill in a census form last April. He had been fined $80 and was sentenced to jail for refusing to pay.

This case and other census prosecutions, plus two soon-to-be completed studies, will probably trigger renewed controversy over computer data banks.

Dallison is one of the 3,000 persons who refused to fill out census forms; over 500 are being prosecuted.

Government Actions

These statistics, announced by the Secretary of State for Social Services, provided one of the few looks into the British Government's actions on privacy. Another picture should be provided this spring when the government publishes the report of the Younger Committee on Privacy.

Above all else, the government jealously guards its own privacy. There will be no open computer data bank hearings with massive TV and press coverage, such as those conducted in Washington by Sen. Sam J. Ervin (D-N.C.).

Instead, the government is conducting two different closed-door investigations, both of which are now concluding. The Younger Committee was formed two years ago when the privacy issue got hot; a secret interdepartmental committee is now considering what to do about the Younger report.

Definitive Study

The Younger report is intended to be the definitive word on privacy. The area of investigation is particularly broad, including industrial espionage, wiretapping, door-to-door salesmen, the press and computer data banks. All of its hearings have been held behind closed doors.

Younger's report is expected to be bland and propose only weak legislation; it should be published by the government late this spring.

The Younger Committee was forbidden to look at the government itself. This decision drew continued objection from privacy advocates, which forced the government to publicly agree to consider the implications of Younger to government.

Look at Government

Last year, the Undersecretary of State for the Home Department revealed that a secret interdepartmental committee was investigating "the establishment and use of computerized data banks by government departments," including "a comprehensive survey of the categories of personal information held or likely to be held in the computer systems."

This information "should enable the government to consider what action should be taken to safeguard personal details in the light of recommendations to be made by the Younger Committee," he added.

Nothing else was said about the group until Frederick Corfield, Minister for Aerospace, told the British Computer Society that the internal review had been started in part because of public fears that records in government computers "may be inaccurate, accessible to unauthorized people, or used for purposes which were not envisaged when the information was given."

On the assumption that some sort of data bank control legislation will be called for in the near future, the British Computer Society is planning a two-year research project to develop what it calls "a data base from which *enforceable* legislation could be written." Despite the society's own financial difficulties, it has been attempting for the past year to raise $65,000 from large manufacturers and users to fund the project.

The project will attempt to define, in a legal sense, what is really meant by a data bank and what sorts of protection can be provided.

In particular, the project will study in detail a proposed control agency modeled after the U.S. Federal Communications Commission, which would license data banks and would have subpoena power.

Developing Nations Symposium to Stress Computer Education

RIO DE JANEIRO, Brazil – Taking the conclusion of the United Nation's Secretary General's report on "The Application of Computer Technology for Development" as a jumping-off point, the Brazilian Academy of Sciences and the Intergovernmental Bureau for Informatics are cosponsoring a symposium on computer education for developing countries.

The UN report notes, "Education and training for the application of computers to accelerate the process of economics and social development must receive first priority."

Education's Role

The symposium, to be held here Aug. 6-12, will examine the role of computer education in developing countries at all levels, including elementary, secondary and university, as well as training and education of computer professionals.

Both national and international strategies for implementing computer education and training in developing countries will be featured. The topic of national strategies will include the establishment of DP centers and training centers as well as "university level centers of excellence."

An examination of DP courses at the university level will consider education for: science and technology, management and economics; behavioral sciences; training and research in computer science; continuing education and teacher training.

Under the topic of training of computer professionals for government and business, speakers will view training of programmers, systems programmers and analysts, teachers and certification.

Speakers will analyze the state of the art, with emphasis on the economic aspects of the problems.

Poor Planning Costs State DP

By Marvin Smalheiser
CW Correspondent

SACRAMENTO, Calif. – Since California's Mental Hygiene Department upgraded its computer, it has been spending twice as much for bookkeeping and billing operations because of uncoordinated system planning, according to the state auditor general's office.

The department's redesigned system, built around a Spectra 70/45, raised departmental costs from $400,000 to $800,000 even though it had less work to do because of a declining patient population, the auditor general's office said.

A spokesman added that nothing illegal had been uncovered, but rather it was a problem of hasty conclusions about which equipment would be needed.

The system was expanded in October 1970. Core was doubled to 262K and peripherals included a printer, two tape drives, two CRTs and one disk drive.

The equipment was added in the expectation that a system under design for reporting on hospital patients would require detailed reports, but the design – by a consultant – provided only for summarized reporting.

Unused Capability

State officials said that as a result there was considerable unused computer capability. Also, the ratio of test and rerun time to product run time was very high.

The system was needed and justified because a cost reporting system was required to qualify the state for reimbursement from the Federal Government for monies spent on mental patients.

But, the auditor general's office said, the Mental Hygiene Department got the hardware before it really knew what it needed and while the state hospital patient population experienced a four-year decline of 30%.

To remedy the situation, the auditor general's office recommended a reevaluation of the system by the department and elimination of the core and peripherals added to upgrade it. The elimination of the hardware, it said, would save $94,000 in 12 months.

The discovery of the uncoordinated system planning and inefficient computer usage came after several years of debate in the state about consolidating state computer systems, which was supposed to save millions of dollars.

The auditor general's report on the Department of Mental Hygiene said plans for consolidation have been at a standstill since June and called on the State Finance Department, in charge of consolidation planning, to take action.

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The single way to store 100,000,000 bytes. The 7330 Disk Drive from ITEL.

Now there's a single-spindle storage subsystem for massive data bases up to 100 million bytes: the new ITEL 7330 Disk Drive. Using standard IBM 3336 disk packs, the ITEL 7330 increases storage capacity more than three times over previous models to 800 million bytes for an 8-drive subsystem. It's plug-to-plug compatible with IBM System/370. And it's quick on the draw; average access time is just 27 milliseconds.

The ITEL 7330 provides the high-capacity storage needed for management information systems, teleprocessing, multiprocessing and time-sharing systems. It offers a number of advantages over its IBM counterpart and other disk storage units. Each 7330 has a single spindle, so you can specify from 1 to 8 drives under one controller for maximum flexibility. The unit has a waist-high slide-back cover, for quick and easy disk change. All internal components are easily accessible. And its compact size means substantial savings in floor space. Reliability is insured through absolute air filtration, disk pack brushes, electromagnetic actuators and closed-loop optical servo positioning.

The ITEL 7330 is the latest in a line of advanced disk storage drives from the Information Storage Systems Division of ITEL. More than 3000 ISS disk drives are working today, proving themselves to be the industry standard for reliability.

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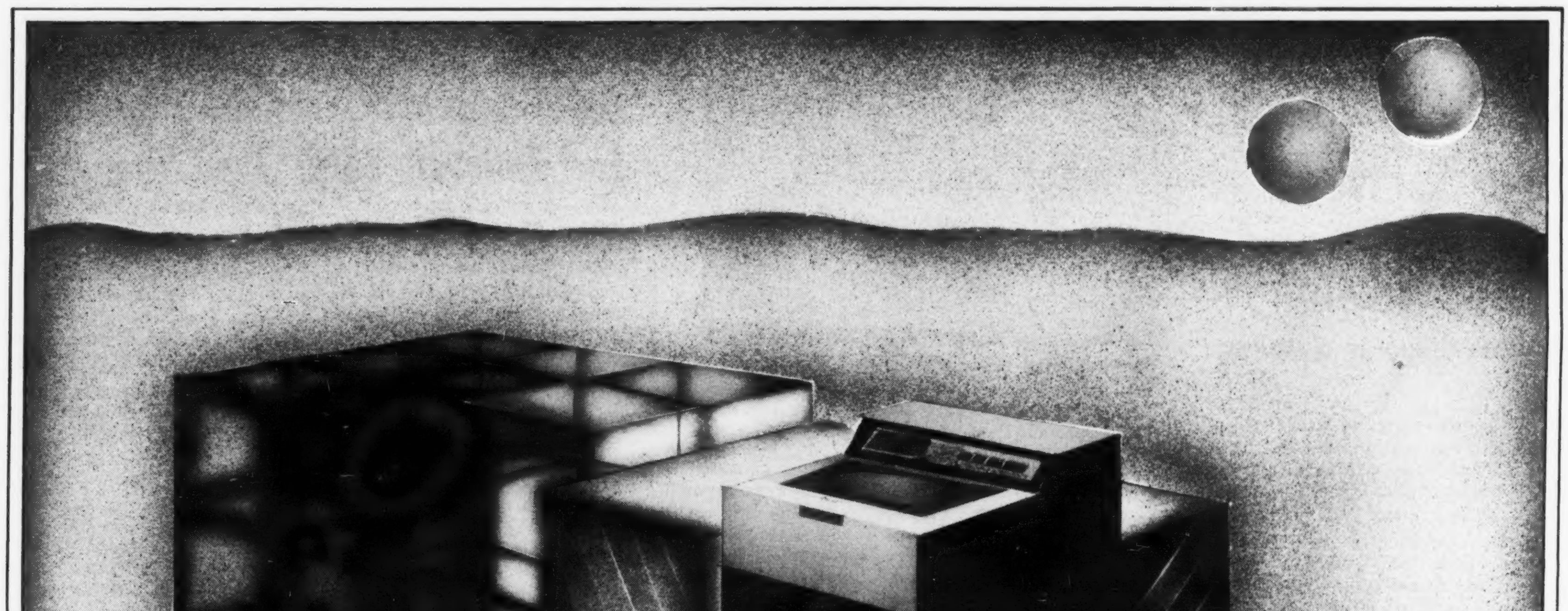


Special Report

Source Data Automation, Part III

Passive Data Gathering Deemphasizes Human Role

By Ronald A. Frank
Of the CW Staff

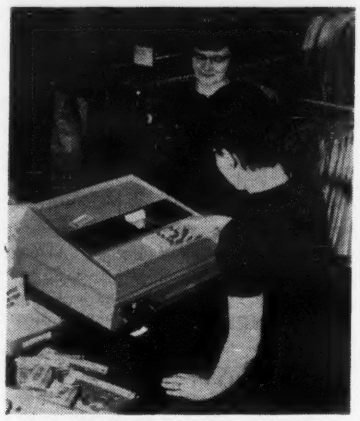
Most source data automation systems require that an operator enter variable data and in some cases interact with a CPU. On the retail floor, the sales clerk "rings up" the sale for the computer and asks the processor whether to accept a charge card for credit.

These systems have simplified the work of the operator, allowed her more time for other functions, and most importantly eliminate additional data preparation steps such as keypunching. But for all their benefits, they still rely on the operator as an integral part of the transaction.

A common characteristic of these systems is that the operator must initiate and participate in a transaction. But another type of "passive" data gathering is possible.

With a passive system data is captured automatically by monitoring equipment at strategic locations. These passive systems usually scan precoded information as items to be monitored pass the control points.

Yesterday



The GE Tradar system accepted embossed cards and merchandise tickets. It was a forerunner of today's department store systems.

...And Today

Illinois Central Piggyback trailer entering rail terminal is scanned by special device which reads the label affixed to the trailer and sends the data to a Label Decoding Processor.

Label-Reading Scanners Adapted For Railroad Yard, Truck Depots

One example of passive source data collection occurs in the railroad freight yard. With previous manual freight car record keeping yard men would physically count the number and types of cars. But the rail carriers realized each car passed certain common points when entering and leaving the yards.

So scanners were developed to read special labels on each car. As the cars passed the scanner, the information on the labels would give a running report of both the type and amount of cars that rolled past the control point.

In the passive systems the data is assembled completely without human interaction. Naturally the reports being generated from the scanned data must be evaluated by operators, but much of the manual "clip board" inventories have been eliminated. Usually the key to implementing such systems, beyond the cost and technology involved, lies in isolating common points where goods must pass in their normal handling process.

Scan the Stripes

The coded vehicle identification information is affixed to the side of railroad cars using "retroreflective" stripes. The stripes present information to the optical scanning equipment through the standard Automatic Card Identification system adopted by the railroad industry.

The labels are 11 in. by 22 in. rectangles with stripes of reflective material similar to the reflective tape used on autos and road signs. To read these labels, which are fixed at preset locations on the sides of cars, a xenon lamp scanner emits a powerful beam of light which is reflected back from the 1-in.-by-six in. multicolored stripes.

The scanner reads the reflected light and decodes the various colors into electric impulses. The impulses are translated into vehicle identification numbers and other data and transmitted to a "Label Decoding Processor" which keeps track of train movements.

The scanners can read labels rolling by at 80 mile/hr even when 80% of the stripes are obscured by dirt, according to ACI Systems Corp. which supplies the system.

Installation of nine ACI scanners in the East Peoria, Ill., yards of the Peoria & Pekin Union R.R. has cut about four hours from the usual time spent by freight cars in the railyard, according to a recent article in *Railway Age*. The ACI system will scan 4,000 to 5,000 cars daily and result in a "17% reduction in clerical forces," according to the article.

Each label decoder at the railyard is a modified PDP-8E minicomputer which accepts inputs from several scanners through a multiplexer. The minis provide message generation, train reversal detection, yard inventory and other vital functions through the optical scanners. Each mini is a station in the railroad's teleprocessing network controlled by a Honeywell 115 CPU with 32K, according to the article.

While the scanners have reduced manual data gathering in railroads, their capabilities have also been adapted to other applications. From the railroad yards, the scanners were modified for use in trucking depots.

Tractors, Trailers

At the Illinois Central Railroad "Intermodal Exchange" terminal yards in Chicago, scanners monitor railroad cars, "piggyback trailers" and containerized cargo. In addition to two track-

(Continued on Page 9)

Initial Concepts Still Survive

- **Tradar System**
- **Transactor System**

Some of the early efforts at source data automation illustrate how many of the initial concepts have survived.

In 1969, J.C. Penny Inc. announced it was implementing a "point-of-sale data retrieval system" that was described as a "retailer's dream come true" by company officials.

Called Transaction Data Recorder (Tradar), the system collected data from the department store floor. The Tradar terminal operated on-line with a central CPU and could read embossed customer charge cards that also had magnetic coding on the reverse side.

More Sales Time

The terminal read encoded merchandise tickets and the charge cards "in a fraction of a second" as each sale was recorded. Tradar recorded merchandise information, authorized credit sales, produced sales slips and receipts and calculated taxes. According to GE, which built the system together with various subcontractors, Tradar gave each sales person up to 30% more sales time.

But in early December it was withdrawn "to avoid any interference with Christmas business."

Why? What went wrong?

Those close to the Tradar said the system was overly ambitious. "It was engineered like a full-scale military system," according to one observer who worked with it. And yet the sales people were happy with Tradar. One clerk, while calculating tax on a scratch pad, said she wished the system was still operating; "now we have to do everything manually."

But many of Tradar's principles have become part of today's systems. For example, the Dennison Magnetic Encoded Retail Information Tag (Meritag) system, which scanned the Tradar merchandise tickets, is still operating in modified form with modern point-of-sale systems.

One system modification that has evolved is the decentralized processing capability. While Tradar fed all its data into one DP center, relying on phone line connections, newer systems have minis installed on-site as a large collecting buffer between the terminal and the main CPU.

Another early bird was the CDC Transactor system designed to collect data on the factory floor. First introduced in 1959, the Transactor accepted punched cards or badge inputs at remote terminals which also had dials to capture variable information.

"It was the classic method for collecting information in the factory as products moved from station to station," one early user said. Inventory control, scheduling, production control and similar activities were easily monitored with the system, he said.

The Transactor collected data from remote stations onto paper tape. The tape accumulated data constantly with little capability to edit or arrange information, the user said. In some cases the paper tape had to be fed into a card translator which then punched cards for entry into the GE 235, he said. Later, direct paper-to-magnetic tape conversion was added, the user said. "It was the best we had at the time."

Another effort involved a "Transaction Recorder" proposal for a government agency, conceived by one of today's major mainframe companies. The recorder was designed for drug stores and hospitals to capture Medicare and Medicaid data.

In addition to accepting information from embossed card inputs, the recorder would have included a Touch-Tone type generator for on-line transmission of data via phone lines to a central DP site.

The recorder had three card slots, one for member ID, drug ID and site ID. Variable data, such as dosage, cost and service, could also be entered. All data was to be recorded onto mag tape cassettes to provide batched transmission or manual delivery of the tape, depending on the volume of transactions.

The desk-top device was designed to generate a multipart hard copy which gave a receipt to those involved with the transaction. The proposal was made in 1968.

Hospital System 'Reaches' the Problem

Data Gathering on Massive Scale

> *"The average physician is not aware of the potentials of DP systems" — a doctor.*

The entry of source data at hospitals is a challenge because of the variety of information that must be entered.

Since 1969, the Baptist Hospital of Southeast Texas has been the test site for the Reach hospital system. The name stands for Realtime Electronic Access Communications for Hospitals, and some of its methods have much in common with other applications.

The Reach system functions around its terminal flexibility. Since differing types of hospital personnel must have access to patient information on differing priorities, the terminal, or "duty station console," had to include an input method that would identify the person requesting the input together with the type of data that should be provided.

To screen these "operators" the Reach terminal includes a badge reader that recognizes punched holes in a card. In a typical inquiry, an X-ray technician inserts his card into the badge reader to check on the type of picture to be taken of a patient.

The terminal reads the badge punches and determines that this person has a "need to know" all X-ray aspects of the patient's "chart." The technician then accesses or enters data through specific "select keys" on the terminal.

The select keys are aligned on the CRT screen of the terminal with pertinent information. If a doctor wants to prescribe a certain type of medicine, he pushes the select key next to that medicine displayed on the screen. The medical display would previously have been cleared when the doctor inserts his card badge into the reader.

With the Reach system, a master file is created and continuously updated for the length of time the patient is hospitalized. Every department in the hospital that is concerned with patient care has benefited from the system, according to Charles Bruton, data processing manager.

Minimal Training

Since each person interfaces with the Reach system with information and terminology with which he is familiar, minimal training is required, Bruton said. Since all orders for patient care are recorded in the Reach system, some interesting statistics are compiled by the two Honeywell 516s which run the system.

The processors daily print out a report of orders that have not been completed. With a manual system an order to give a patient a certain medication could go unnoticed, Bruton says. But the Reach printout will instantly call attention to all such unfilled orders.

Have the Reach records eliminated the handwritten patient charts? Surprisingly, no. While the system has been designed to fully automate all patient information, the Baptist Hospital doctors have been hesitant to put their patients entirely at the mercy of an automated system. Those closely associated with the Reach experiment believe it is only a matter of time before the doctors agree to switch the patients' charts to the computerized system.

But others in the health care field have reservations. "The average physician is not aware of the potentials of DP systems," according to one doctor.

The medical community is still fearful of malpractice suits, according to this doctor, and because of this fear (which has little relation to the capabilities of automated systems), acceptance of specialized health care data collection schemes has been very slow. The solution is an educational process to lessen the concern for malpractice charges, the doctor says.

Exceeds Manual Charts

The Reach system at Baptist Hospital exceeds the manual patient charts in some ways, according to Bruton. Often the Reach system will acknolwedge the completion of an "ancillary service" before it is actually written manually on the patient's chart, he says.

Print-out verifications of data entered into Reach are periodically delivered to nurses' stations during the day to update charts, but this is done at certain times and often a doctor can get information from a system CRT not yet available with the chart. In addition a doctor can access data from all his patients on any console in the hospital. The hospital's administration feels that eventually all patient records will be completely automated via Reach, "but no one is going to push the physicians," one source said.

Reliability of automated hospital systems is critical and the Reach system is described as "fully duplexed" with complete backup data files.

While the Reach system attacks the hospital data-gathering problem on a massive scale, some medical institutions are approaching the automation problem on a step-by-step basis.

At the Community Diagnostic Center in Denison, Texas, patient records have been adapted to more conventional DP methods. Using a 360/30 the hospital started automating accounting information and gradually phased into clinical data gathering. Using conventional devices such as "addressograph imprinters like those used in many department stores," according to Dr. Donald H. Brandt, doctors can enter their orders onto prescription pads. Embossed cards, which are printed with vital information when the patient is admitted, are the key to the system.

The successful hospital system depends on software specialists who understand the unique needs of the medical environment, Brandt says. "We view the computer as a tool. It does not take the place of the physician, but it has certainly helped us improve our care of patients," he says.

Next week's Special Report details how users and suppliers can speed the development of new applications.

Label-Reading Scanners Keep Rail Freight Moving

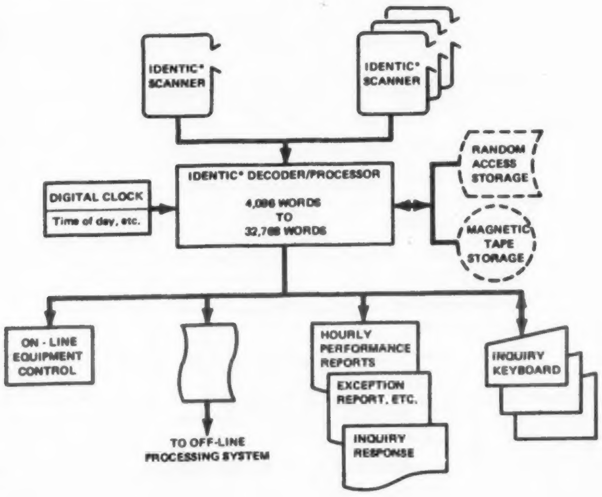
(Continued from Page 8)

side scanners, the railroad has installed three roadside scanners to check tractors and trailers in and out of the terminal. The scanners are connected to a mini which also handles seven TTYs and a CRT used by the terminal's dispatcher.

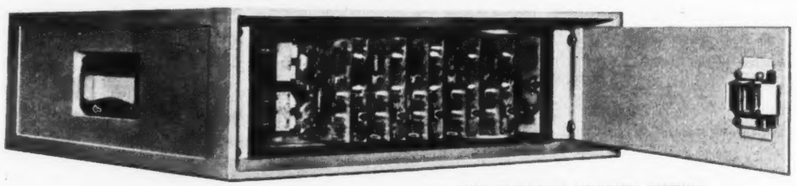
Among the functions provided by the Illinois Central system are trailer and flat car inventory, pick-up delivery and trailer reservation; parking and cartage; programming of trailer loadings on cars; and yard storage data, according to the railroad.

Instead of receiving data from the scanners, some CPUs can generate the labels to be monitored. At General Trading Corp. in Carlstadt, N.J., "order-picking labels" printed on an NCR Century 100 are scanned for routing to the proper shipping site.

The pressure-sensitive labels identify groceries as they travel on conveyors, according to George Abad, General Trading's president. "The scanner has eliminated manual label reading and does not make as many mistakes as a person would," Abad said.



The Identic system from Computer Identics Corp. is a passive scanning system which can interact with TTYs and CRT terminals.



Editorial

More Bad Publicity

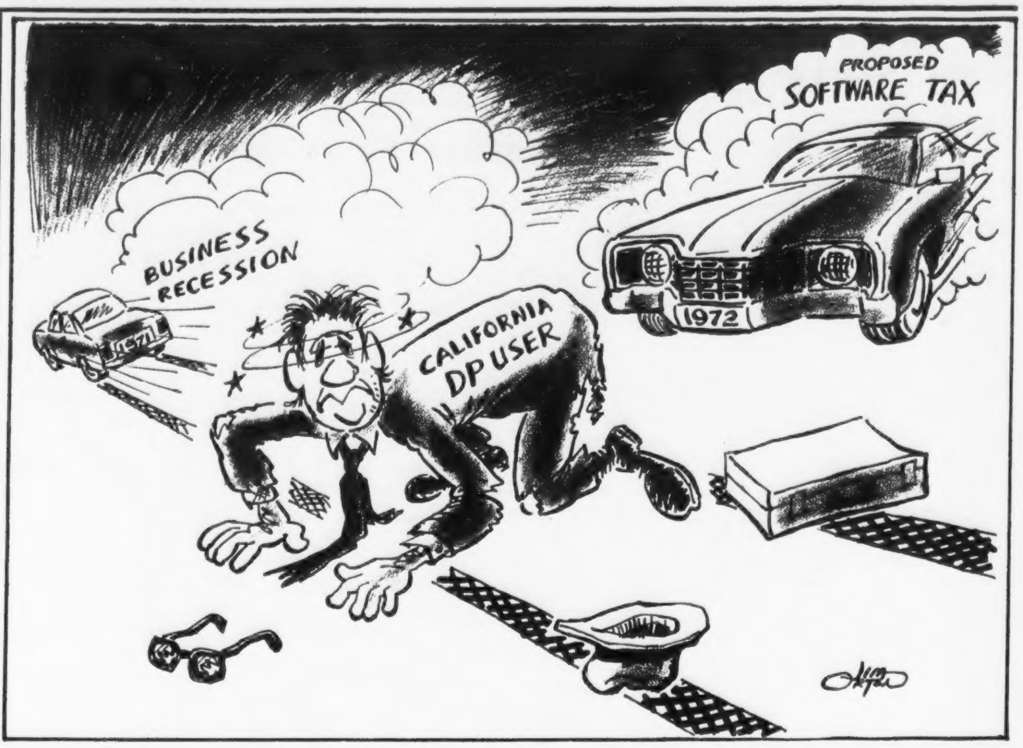
We all know that computers can be programmed to increase the level of individual service given to customers. Certainly there is no reason why they should be programmed to decrease service.

Yet some large users are still using computers as an excuse to decrease service.

The latest example comes from a pamphlet published by the Carte Blanche credit card organization. Called "Do You Know the Facts?," the pamphlet lists 14 "facts," including the following:

"Before taking an extended trip, we suggest that you arrange for payment of Carte Blanche statements during your absence. We use an electronic computer for billing and cannot withhold the mailing of monthly statements."

Since most creditors wouldn't make such an arrangement anyhow, why bother to mention it at all? And why mention the computer, when the computer could handle such a job?



Letters to the Editor

Who Should Control Privacy In Enforcement Systems?

Your comments on security in law enforcement information systems [CW, Jan. 19] provoke the following observations:

Legislation before Congress, e.g., Senate Bill 2546, proposes "to facilitate and regulate the exchange of criminal justice information systems and to insure the security and privacy of criminal justice information systems." It does seem that burgeoning computer record systems pose sufficient threats to privacy so as to require explicit legislative protection for the citizen. Senate Bill 2546 begins to address the important issue of security and privacy.

It is not the security and privacy provisions of the bill that have caused a stir among state officials but rather the provisions relating to dedicated systems and management control. Whether any provisions of this proposed legislation belong at the federal level is debatable. This bill delves into such specificity in the organizational area that states would be prohibited, through fiscal pressure, from following an alternative course which may be supportable from every point of view.

Specifically, Senate Bill 2546 would require that "all criminal justice information system(s) . . . funded in whole or in part by the Law Enforcement Assistance Administration . . . ." must ". . . . be dedicated to law enforcement purposes and be under the direct management control of a law enforcement agency."

The language which requires dedicated equipment under the direct control of law enforcement statutorily echoes the FBI's argument that if law enforcement is to be held responsible for the confidentiality of information in computerized systems, law enforcement must have complete management control over the hardware and people who use and operate the systems.

The problem with this argument is that it implies law enforcement shall be exclusively responsible for maintaining offender record confidentiality. If privacy is to be insured by regulations and laws which contain civil and criminal penalties for inadvertent or malicious disclosure, then surely such laws will apply with equal force to non-law enforcement agencies who might have custodial responsibility for offender records.

Law enforcement would be responsible for the security and privacy of such data only insofar as it has physical and direct administrative custodial responsibility.

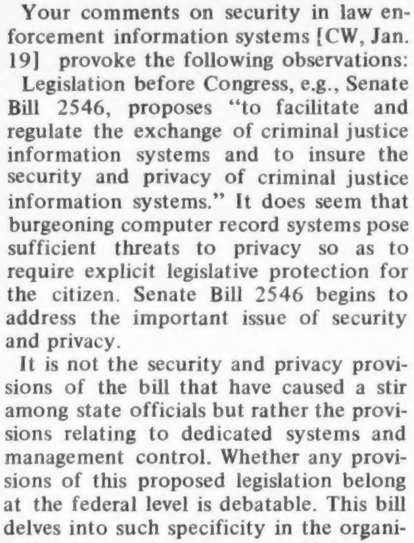
As an alternative to Senate Bill 2546, it is suggested that the states take the initiative in developing appropriate statutes covering security and privacy in general and security and privacy for criminal offender record systems in particular.

Harry C. Baird

Burton, Wash.

Donald S. Ross

Olympia, Wash.



Banking Industry Should Realize DP's Limitations

Reference Dee W. Hock's article [CW, Jan. 26].

Before we get into the "challenge" to the data processing industry I take exception with Hock's conclusion that the explosive growth in number of card users is a proof of worth.

He seems to ignore that the bank card was the subject of the largest promotional campaign his industry has ever undertaken. Avoiding the tediousness of supporting details, may I simply say that bank cards are a useful but highly limited service. This is to say the bank card industry, as it exists today, is a promotional contrivance at defraying costs which would be prohibitive if only "valid" users had to absorb them.

What this means is that the banks have created a situation in which we (data processing industry) cannot possibly furnish adequate service to *their* customers. It seems incongruous that an industry that has been using data processing equipment for over two decades has not yet realized its limitations.

Yes, Dee Hock, complex responses can be forwarded from complex inquiries. Yes, hyper-sophisticated error handling and even error anticipation techniques can be employed. Unfortunately, however, they require a resource-base unavailable in banking's ordinary economic frame of reference.

It may be that in specific situations management has not been advised of this fact of life by self-interest motivated individuals, but to say this is an industry-wide problem smacks of "crybabyism."

The cause of bank card service problems seems to lie in management. It would seem more profitable to the banking industry to ask itself how to avoid mis- or under-managing DP departments rather than to blame DP for a lack of industry and/or imagination.

It is high time management became involved enough in data processing to at least recognize the limitations inherent therein.

What Hock has effectively said in his articles is that the banking industry has not realized anticipated results from one of its departments. The challenge seems to be to banking management to learn to use tools made available to it.

A.E. Michalski
Technical Consultant
University Computing Co.
Chicago, Ill.

Virtual Memory 'Mystery' Solved by Reader

In regard to the virtual memory rumors for the IBM 370 that Alan Taylor mentioned [CW, Dec. 22], it may not be as mysterious or as secret as one might believe.

My manual for the 370/145 lists two instructions under the "OS/DOS Compatibility" feature that supply a virtual machine to a running program. The "execute local" instruction (EXL – op code B20E) establishes a virtual environment and traps on SVC and PC interrupts, and the "adjust CCW" instruction (ACCW – op code B20F) modifies data addresses in CCW strings to transform them between real and simulated environments.

J. Gregory Noel

Tetra Tech, Inc.
San Diego, Calif.

Limited Financial Growth Frustrates Technical People

It was refreshing to read Thomas L. Scott's "Viewpoint" article on curbing gross waste of manpower [CW, Feb. 2]. My only hope is that the article reaches the top executives in industry.

It is indeed frustrating for technically oriented individuals to know that the only growth opportunities (financially) are in management, when they have no interest in managing. Too often, financial rewards are not based upon individual contributions to a company, but rather, on class structure (management versus technician).

W.L. McNamar

Fountain Valley, Calif.

Reporting Sins Not Enough

At long last, Alan Taylor has managed to accomplish what has been badly needed in our professional community for 20 years – a computer Bill of Rights. It is certainly a giant step in the right direction.

In regard to his "no action" right, I would like to point out that it would be possible for a person to absolve himself of his sins by simply reporting them to the responsible authority. To use an illustration, a medical officer could report dangers to the water supply which he himself has poisoned and go free. No provisions have been made to cover such a situation.

Lastly, no penalties resulting from abuse are outlined. After all, what are rights without duties?

It would seem that if proper remedial action is not taken on behalf of the responsible authorities, that condemnation may be made by the professional group sponsoring your code of ethics. This condemnation may take such forms as boycotts, adverse publicity and/or expulsion from the professional group.

Hamilton Armstrong, Jr.

Crucible, Inc.
Syracuse, N.Y.

'Passing CDP Exam' Passes

Congratulations to you and Mike Ingram for the two articles on "Passing the CDP" [CW, Jan. 26, Feb. 2]. Although I do not intend to take the exam at this time, I appreciate Ingram's analysis and bibliography. It seems like a fine assembly of information.

Edward S. Perry

Paramus, N.J.

DP Professional's Response to Dee Hock: What Date Is Circled on Your Calendar?

The challenge to the data processing profession provided by Dee W. Hock in his article, "DP Must Serve The Bank Card Carrier" (first published in *The American Banker* Dec. 1, 1971, and reprinted in CW Jan. 26), is welcome. The facts of data processing's failure quoted by Hock are valid. The frequency of the failures has been evidenced in the recent *Time/Afips* study of the public attitude to computers.

The Taylor Report

By

Alan Taylor, CDP

DPers can no longer stay silent and hope their failures will just go away. The time has come for data processing professionals to recognize their failures. Hock's criticism offers a very valuable lesson.

No Simple Answers

But the answers to Hock are not simple. The direct response to his question – whether or not the profession has the technical strength for the various requirements Hock sets forth – is fairly simple, but giving it baldly may be misleading. The fact is that answering his request *is* technically feasible, but we also need to know what must be done to act on these answers.

The problem, however, is in the need to forecast the possibility of such data processing failures in the future, and in organizing ourselves to efficiently prevent such failures from occurring at all. Only if the data processors do this will Hock's real challenge of protecting the bank card carrier – and by implication, all those other millions of people who are affected by the operation of data processing systems – be met.

From the record it is clear DPers cannot simply place the blame on Hock for failing to include all his requirements in his original system study. True, he did fail to include them – but then so did so very many other managers that it is not *managerial* failure that we are dealing with, but data processing's failure to bring the real facts to managerial attention with the appropriate force.

If only managerial failure was the cause, then the current widespread dissatisfaction, evidenced in the *Time/Afips* study, would not be present.

The record also shows that while these failures were actually taking place, and while public dissatisfaction was growing, inside the profession we were blissfully confident that we were performing our job properly.

We reserved our indignation for the antics of DP schools which raised unfulfilled hopes in the minds of paying students, or which used the magic letters "IBM" rather too conspicuously. We failed to realize what was happening, even though we individually often fell victim to the same problems ourselves.

This failure to react promptly to the problem indicates something is missing from our professional structure. It probably indicates that what is missing is some quite major component of the profession. (It has to be *within* our profession because, as Hock points out, the need is to foresee possible problems, and creatively find solutions to protect the computer usees before anything goes wrong. To do this requires professional knowledge; therefore, simply blaming outside influences is inadequate).

The crux of the problem is how we can creatively restructure our profession so that the technical expertise necessary to protect outsiders is used to prevent crises.

Restated this way it becomes clear that our current ability to technically solve the problems is only one part of the solution. The data processors, by and large, do not have the necessary authority to carry out such operations. People, even people like the president of National Bankamericard, tend to think of computers as superhuman, with almost the authority of a god – and certainly with the authority of the president of a corporation.

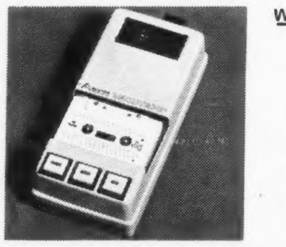
> *"Our challenge to Hock is: What date is circled on your calendar so that the process of making people more important than paper can begin?"*

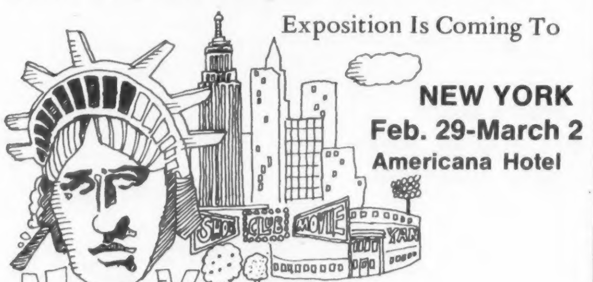
Factually, while such authority is needed to achieve the necessary restructuring of professional practice, data processing does not have it. It still (fortunately) resides in the hands of the company presidents, and will continue to do so. The solution to our mutual problems therefore will not be achieved without some kind of cooperation between the skills of data processing and the authority of presidents.

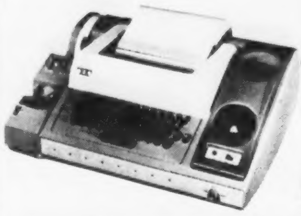
Before the data processing profession can proceed to make people more important than paper, it must know how much presidential cooperation can be counted upon. At the risk of answering a question with a question, I would like to ask Dee W. Hock to meet with us on this problem.

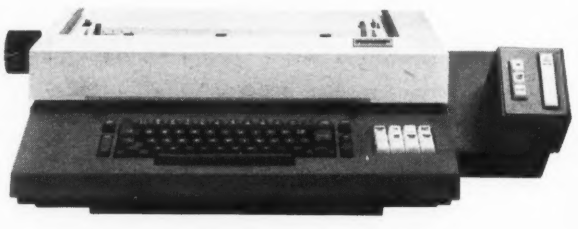
The Society of Certified Data Processors is prepared to make such a meeting worthwhile for Hock. It is prepared to make a serious system study for him on how the goal of making people more important than paper can be achieved. It will do this if, *and only if*, Hock, and others like him who have similar authority, will listen to us.

So here is our challenge to Hock. When are you personally available to meet with us, and to listen to us? What date is circled on your calendar, so that the process of making people more important than paper can begin?









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RCA Users Reassured By Software Commitment

By Frank Piasta
Of the CW Staff

ATLANTA – Univac's commitment to continue to support both TDOS and DOS operating systems drew a warm response from the attendees at the recent meeting of the RCA Computer Users Association.

The happiest users were those who had implemented DOS which had been deemphasized by RCA in favor of the now-defunct OS-70 system.

The two operating systems not only will be offered, but will be enhanced according to a priority schedule determined by the users, Univac said. The list of enhancements offered by Univac would do much to reduce the disparity between the systems, and include some OS/70 capabilities in both systems, according to many users.

Of particular interest to TSOS users was Univac's statement that version 8 of VMOS, resolving some 1,500 bugs and including 30 enhancements, would be ready Feb. 11.

DOS, which had suffered from slow turnaround time on bugs (it was maintained by Siemens in Germany) will be maintained by Univac after June 30. Version 14, due April 15, will resolve 240 bugs, 70% of those outstanding, with version 14A, which eliminates 90% of Cobol bugs, due in July. Version 15, scheduled for the fourth quarter of 1972, should provide source language common with that of TDOS.

Several enhancements in version 14 DOS include 1400 emulation for the 70/6, 1410/7010 disk emulation on 70/45 and 70/6 and COS-7. The 14A release, due in July, will bring the Cobol compiler up to Ansi Level D specifications.

Version 15 is scheduled to include 8590 disk support, Level H Fortran and RPG with Isam. The RMS (Resource Management System), which includes I/O spooling, job scheduling, automatic device assignment and multiprogram execution control, will be added to DOS June 1.

Univac also announced several enhancements were being considered. They include multiple executive overlays, COS version 8, remote job entry, TDOS language compatibility, TDOS data file compatibility, dynamic random access allocation, shared file update, and enhanced data management system and disk T&M routines.

386 Bugs

TDOS version 21, due to be released on May 15, resolves 386 bugs, more than 90% of those outstanding.

TDOS users assigned priorities to a list of proposed enhancements for future releases to include:

Disk compilers, disk library maintenance, the ability to run multiple compilations simultaneously, I/O spooling, priority job scheduling, job step accounting and logical device assignment.

Also, resource allocation, JCL cataloging, remote job entry, dynamic random access allocation, shared file update, an enhanced data management system, COS-8 and Fortran file compatibility.

Nils T. Carlsen, CUA Cobol SIG chairman, comments on his committee's recommendations.

F. Douglas Robinson, CUA recommendations chairman, presents software enhancements requested by the users' group. (CW Photos by F.J. Piasta)

Series Name Not the Same

ATLANTA – The RCA series names will no longer be used to identify computer systems acquired by Univac from RCA. The company announced that from now on the latest RCA systems will be known as the Series 70/2, 70/3, 70/6 and 70/7.

In keeping with the name change, Univac urged the RCA Computer Users Association to take steps to change the name of the group. In a letter to association President David Rau, which was read at the meeting here, John C. Butler, vice-president and general manager of the Series 70 effort, suggested the organization consider the title, "Series 70 Computer Users Association." The change, which enjoys Rau's support, was suggested not only to make the name of the group current with the purchase of the user base by Univac, but also to eliminate any problems that may be caused by continued use of the RCA logo and trademark, the group was told.

The membership was also informed that a merger of the association into the Univac users' group structure was being considered.

Two alternatives were outlined. The first would bring the group into the Univac organization as a separate entity while the second would make Series 70 users direct members of the Univac Users Association (UUA).

Many attendees expressed interest in the first proposal, maintaining their organization would lose a great deal of its "clout" if they were to lose separate identity.

TSOS Users Have Cause to Worry

ATLANTA – One group looking forward anxiously to Univac's software development consists of the current TSOS users.

These users believe the operating system they are now using is significantly superior to that offered by any other manufacturer, including IBM and Univac.

The users fear that if they are forced to abandon their RCA equipment they would have to restructure their systems to adapt them to the more limited capabilities offered by other software systems.

The users suggest the adaptation of Univac hardware to enable use of the RCA TSOS and VMOS systems.

Today's DP Can Bring Welfare Reform: Nathan

Special to Computerworld

WASHINGTON, D.C. – Any computer system for President Nixon's proposed welfare reform package must be designed around today's technology and not tomorrow's.

Richard P. Nathan, deputy undersecretary for welfare reform at the Department of Health, Education and Welfare, believes it would take too much time and money to develop a system based on futuristic ideas.

Nathan is responsible for managing the welfare package if Congress approves the multibillion dollar reform legislation.

Along with his top planners, Nathan has conferred with Social Security Administration and National Aeronautics and Space Administration authorities as to what is needed to run a vast information system such as required by a national welfare plan.

The use of automatic data processing equipment, Nathan said, will allow the vast national welfare system to operate with an anticipated 80,000-man workforce.

Nathan indicated the administration doesn't want to get tied to any system that won't produce on the spot.

As the result of his meetings with federal computer experts Nathan is convinced current technology is the answer and "not something that will take years to develop."

Random Notes

360, Older Tape Formats Handled by 'Biblio-File'

MIAMI – DOS users can take advantage of tape librarian features normally available only under OS/360 with the Biblio-File package from Systematics, Inc. The software processes 360 standard tape labels, and second generation or unlabelled tapes as well, the company said.

Made up of a capture routine and a reporting system, which can be used separately or in combination, the package generates lists of active files, scratch tapes and tape maintenance history. The entire Biblio-File can be purchased for $6,000 from 777 N.W. 72nd Ave., 33126.

XCS Extends Service

SAN FRANCISCO – Xerox Computer Services, a company specializing in accounting services for small and medium-sized business, has expanded in the San Francisco Bay area, with the opening of a new office at 343 Allerton Ave., in South San Francisco.

Programs now available at user terminals include financial reporting, accounts payable and receivable, inventory control and invoicing. Order entry, payroll, job costing and sales analysis are also operational, an XCS spokesman said.

Support Stretched for DOS Release 27

WHITE PLAINS, N.Y. – IBM has established a new field support policy for DOS Release 27, the first issue of the Disk Operating System for the S/370. The new plan appears to give that release a longer life span than it would have under earlier policy, and it reemphasizes the changed nature of DOS.

Under the new plan, IBM will provide no-charge support for Release 27 until 90 days after DOS Release 29, the second subsequent release, becomes available, some time in the future. Policy in effect until now terminates free support for a DOS release three months after the immediately suceeding one becomes public.

The impact of this change is unclear. Corporate policy notwithstanding, users have often found local IBM offices continue Field Engineering support without cost, to solve problems that can be traced back to IBM coding.

In any case, the new policy will apply only to DOS Release 27. The support plan for Release 28 and subsequent releases has not yet been decided, a company spokesman emphasized.

Support for DOS Release 26, the last one for the 360, also differs from prior policies. IBM has said that March 31, 1973 is the last date on which users can expect no-charge support for Release 26, regardless of what other releases are then available.

The change is IBM's posture suggests that:

- DOS users have been slow to jump immediately to a new release of the system as soon as it is available, and IBM sees that this conservative approach should not be penalized.
- DOS Release 27, scheduled for release in May, is a radical change in the operating system, and users need more sense of support than they have had with other releases, or
- Release 27 may have been rushed and Release 28 is likely to be a catch-up, patch-up release with a limited life span, to cover deficiencies until Release 29 can be readied.

The current continuation of free support, in spite of company policy is possible, users think, because in some cases the problem has already been encountered and solved. The coding to correct the situation is available at or through the local FE office, without IBM expending or the user paying for any analysis or programming time.

In other cases, it is apparent that the local IBMers are willing to put in some non-billable time to keep the relationship with users a pleasant one.

1400 Object Code Turned Into Cobol

NEW YORK – IBM 1400 Series object decks can be transformed into Cobol source decks, with documentation, through a conversion service developed by Insco Systems Corp. and available through C-S Computer Systems Inc. The service can work with object code in a variety of SPS or Autocoder load formats.

Output is a low-level Cobol that does not conflict with any compiler, but could be used on IBM or other CPUs. Thus it provides a means to move out of emulation mode on IBM 360/370 equipment, or to move to another vendor's hardware without major reprogramming.

It also gives the user a chance to reestablish an understanding of programs that have been patched so much they can't be tied back to the original program listings.

Work With 1410 Code

C-S normally handles 1401, 1440 or 1460 object code and can work with 1410 code despite differences in opcodes and address formats. The service is geared to work with normal IBM-supported IOCS, but will accept user-coded variants if they are sufficiently defined prior to the translation.

The user is encouraged to provide enough pseudo source data to make the C-S output comparable to hand-coded Cobol. It is difficult for the service to establish Picture clauses, for example, without help from the user, C-S said.

The Cobol output, in addition to a source deck, includes a program listing with diagnostic flags, and a list of all 1400 Series instructions that could not be translated. A Cobol cross-reference list identifies all literals and shows the verb that produced the reference.

Other documentation generated by the service includes a listing of all source definitions that were entered, the loader that was used and a 1401 memory printout. The system also produces a cross-reference list of the original 1401 program, showing both mnemonics and indexing.

Users of the service are charged a base fee of $50/program plus a variable amount ranging from 20 cent/card for uncondensed SPS to $1/card for condensed Disk Autocoder.

C-S Computer Systems Inc. is at 12 Gold St., 10038.

Equipment Movement Monitored by Two Systems

●'Reap' Bows From Numerax

ENGLEWOOD CLIFFS, N.J. – Managers charged with maintaining control over a limited supply of almost any kind of valuable commodity, including people, that can be moved from place to place, may find it easier to do their job with the Rail Equipment Allocation Package (Reap) recently released by Numerax Inc.

Though clearly intended to solve one particular type of control problem, Reap has been modified by users to optimize the movement and know the condition of such diverse items as bulk paint tanks leased to others on a long-term basis, minicomputers shifted from one company location to another, or travelling salespeople as they move about the country.

Individual Monitoring

Reap analyzes input from any appropriate source and performs the monitoring of individual movements on a daily basis. It reports, on an exception basis, those units – or people – which are in, or are entering, an unusual status.

In its original implementation, Reap performs calculations of mileage allowances and demurrage charges, and distributes equipment costs to individual cost centers. The system produces 25 reports which can be used "as is," or altered to fit the needs of users with interests other than rail equipment.

Run in a DOS environment on a 64K 360/30 or larger CPU, Reap carries a base price of $25,000.

Numerax Inc. is at 560 Sylvan Ave., 07632.

●IBM Has 'First' for Cics

WHITE PLAINS, N.Y. – Motor freight carriers with large scale 360/370s and 2740 terminals can pinpoint the location and status of each tractor and trailer, on an inquiry basis, with the Fast Information Retrieval for Surface Transportation (First) software from IBM.

In effect an application that operates under IBM's Customer Information Control System (Cics), First allows users at remote sites to enter or extract information showing the make-up of each rig, the crew, the amount of freight aboard and how soon it should reach a particular terminal.

With that, local managers should be able to plan loading and unloading operations with maximum efficiency and improve their operations overall, IBM said.

First has two modules: Equipment Control, which supports the data base structure for truckers; and Message Switching, which provides the communications support.

Message Switching is currently available for OS users, and will be ready for DOS in April. Equipment Control is expected to be available for OS use in June, and for DOS a month later.

DOS users of First require at least 96K bytes of core, and availability of Cics/DOS, which leases for $500/mo. OS users require 256K bytes and Cics/OS, for $600/mo.

For either operating system Equipment Control will lease for $1,000/mo and Message Switching costs $280/mo, in addition to the Cics charges. Charges for the First modules will, however, be waived after 36 consecutive monthly payments, IBM said.


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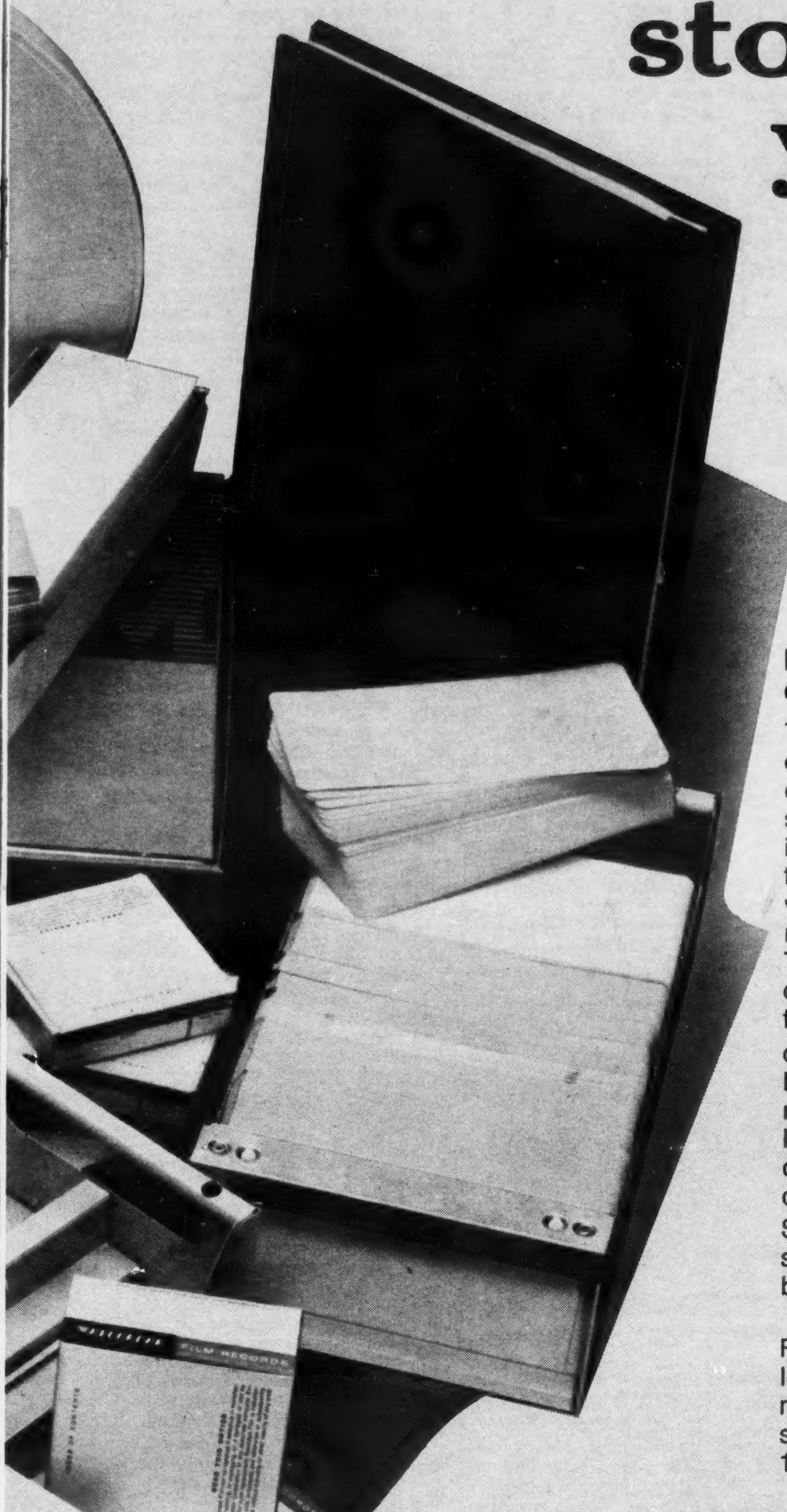

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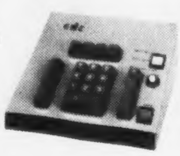

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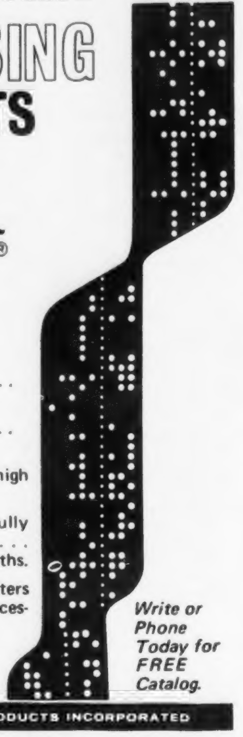

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Direct Key Entry

2 S/3s Link Teleprocessing Net

By Ronald A. Frank
Of the CW Staff

WEST CHESTER, Pa. – When is a CPU not a CPU? When it is used as an on-line input terminal to another processor.

Using IBM's Keyboard Data Entry (KDE) utility program, Lasko Metal Products Inc. has connected two System 3 processors into a communications network.

Communications

The KDE utility allows operators at the Lasko plant in Franklin, Tenn., to enter order data directly at the S/3 Model 6 CPU console keyboard. The data is then transmitted over dial-up lines using Bell 201 data sets to an S/3 Model 10 at the Lasko office in Pennsylvania.

In addition to the KDE entry method, the Lasko communications link can handle disk-to-disk data transfers between the two computers. The link has "tightened the order production, shipment cycle of the company's fans, heaters and kitchen appliances," according to a spokesman.

Operating at 2,000 bit/sec, the Lasko system can transmit complete billing and invoicing for the previous day in about one hour, according to Lyle Zabel, DP manager. This includes an average of about 150 orders each day, he said.

The Tennessee office also transmits the local 500-man payroll in 10 minutes once each week with the KDE utility. Along with direct key entry, the program formats records to Lasko specifications and inputs the data directly into an indexed disk file at the Model 10 in Pennsylvania. The payroll input is now one-way with checks mailed back to Tennessee, Zabel said, but, later, on-line remote printing of the checks will be implemented, he said.

Both the Model 6 and Model 10 CPUs are equipped with the Binary Synchronous Communications Adapter. Because of the transmitting speed, Lasko can use the inter-office dial-up tie-line for voice communications when data is not being sent.

Before the on-line link was installed, all communication between the Lasko offices was done by mail. "Our orders are now shipped and billed in three days," Vince Arcuri, Lasko's controller, said.

In addition to speeding its order cycle, Lasko has developed an inventory analysis program, and more effectively monitored its backlog and accounting information. For the future a complete product cost analysis system will be implemented on the S/3s, Zabel said.

Modems Bell Compatible

FORT WASHINGTON, Pa. – The Tele-Dynamics Division of Ambac Industries Inc. has introduced two data sets that are compatible with both the Bell 103 and 113 modems.

The Tele-Dynamics 7103F provides asynchronous full-duplex communications at 300 bit/sec over dial-up lines. The modem includes a manual switch for call-answer or call-originate modes, the company said.

The 7103G includes automatic originate or answer modes and can be used with a Bell CBS or CBT access arrangement.

The 7103F is priced at $450 while the 7103G costs $580. Both modems are available for immediate delivery. The firm is at 525 Virginia Ave., 19034.

Terminal System Has Tape for Flexibility

MOUNTAIN LAKES, N.J. – Data Access Systems has announced the Model 4125 portable terminal system which includes a 30 char./sec terminal and a mag tape unit for off-line operation.

The system operates in half or full duplex mode via dial-up lines with a built-in acoustic coupler. The mag tape unit allows high speed search and edit operations. The system is priced at $5,045 or $187/mo for 10 day delivery. The firm is at 100 Route 46, 07046.

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Bits and Pieces

Keyboard/CRT Unit Enhances Graphics Display

SUNNYVALE, Calif. – Data Disc, Inc. has added the 6611/6612 keyboard and monitor to its 6500 and 6600 display systems for multiterminal graphics display applications.

The 14-in. CRT provides accurate picture geometry with linearity better than 2% of the picture height, according to the company. The typewriter keyboard generates 95 alphanumeric and 20 control characters. A typical configuration will consist of from four to 16 terminals driven by one display system, Data Disc said.

Price of the 6611/6612 keyboard and monitor is $1,500. Delivery is 90 days from 686 W. Maude Ave., 94086.

Cabinet Stores S/3 Disk Packs

WORCESTER, Mass. – The Wright Line Division of Barry Wright Corp. has introduced disk pack storage cabinets that minimize disk handling and provide work surfaces in System 3 installations.

Each module can store eight packs vertically and one on a roll-out shelf. The shelf may also be used for S/3 card trays.

Available with charcoal body, black base and IBM blue, red or yellow door and back panel, the M3102-11 module sells for $126 and is available from stock from 160 Gold Star Blvd., 01606.

Printer Increases Mini Output

ANAHEIM, Calif. – The 5096 Line Printer System from Datum, Inc., is designed to permit a tenfold increase in minicomputer printer output.

Designed to interface with the DEC PDP-8 family, the 5096 provides a 100-char./sec printout and provides six copies. It consists of a serial impact printer controller, software and cables. The standard model provides the 64-character Ascii upper-case set. Other formats, such as 96-character Ascii, Baudot, Ccitt, Ebcdic or OCR fonts are available.

The System 5096 is available at under $3,000 from 170 E. Liberty Ave., 92801.

Projector Shows Teletype Output

WILMINGTON, Mass. – The 3300 Series Teletype Projectors are designed by MFE Corp. to provide on-line group viewing of a Teletype Model 33 terminal output.

Price is $745, and delivery is four weeks from 340 Fordham Rd., 01887.

Three Terminals Aid Remote Batching

By Frank Piasta

Of the CW Staff

MINNEAPOLIS – The 730 Series of batch terminals from Control Data Corp. will enable almost any user's data network to be connected into a large computer system for remote batch processing.

The Series is for the small user who may want large-scale computing power, and is available in three models to suit user requirements.

- The Model 731, intended for low-speed applications, can transmit data at speeds of 4,800 bit/sec.
- The Model 732, intended for use in medium-speed systems, has a transmission rate of 9,600 bit/sec.
- Intended for high-speed applications, the Model 733 can handle data at rates as high as 50,000 bit/sec.

The three models are compatible with each other, allowing the user to intermix models of various speeds and configurations on the same data network.

The ease of connection of the series is enhanced by its RS232 C interface which allows use of telephone lines for communications and connection to virtually any computer system equipped for teleprocessing. An additional factor affecting compatibility is the series ability to handle data arranged in formats required by computer manufacturers other than CDC, including the IBM 360/370 series.

The 730 Series is intended for use in scientific as well as business applications and is designed to be used by personnel untrained in computer operations.

A choice of peripheral equipment is available with the 730 Series in addition to the standard CRT and keyboard. These include card reading and punching machines, line printers, and a drum memory for program storage at the remote site.

One-year lease prices of the 730 Series range from $830/mo to $2,300/mo, excluding maintenance. The units can be purchased for prices ranging from $30,300 to $96,800.

Control Data said production deliveries will begin in June.

Replacement Memory Cuts Costs, Doubles 360 /22 Core Capacity

MARINA DEL REY, Calif. – The economy-minded user who needs the performance of a 64K IBM 360/30 can substitute a 32K 360/22 equipped with a 32K ARM-22 memory from Ampex.

The resulting system, with twice the capacity of the maximum 360/22 configuration, operates with a 1.5 μsec cycle time and has performance identical to that of the IBM 360/22 main storage, according to Ampex.

The cost advantage to the user is obvious. The 32K 360/22 Model E carries a lease price of $1,150/mo. The 32K Ampex ARM-22 adds $1,080/mo on a one-year lease, for a total monthly cost of $2,239/mo. The Model F 360/30 with 64K has a lease price of $3,870/mo.

The attachment of the memory, an Ampex spokesman said, is a relatively simple procedure. He likened it to the wiring changes made when a Model E 360/30 is upgraded to Model F specifications by IBM.

Purchase price of the ARM-22 is $42,230. This, combined with the $44,000 price tag of the 360/22 E, totals $86,230, a savings of $86,810 compared to the $173,040 cost of the 360/30 F.

The ARM-22 is available from stock from 13031 W. Jefferson Blvd., 90291.

Mini-Priced

Linolex Model A for Business

NORTH BILLERICA, Mass. – Linolex Systems Co., Inc., has developed a computer system in the minicomputer price range specifically designed for business applications.

Called the Model A, the system includes a CRT, keyboard and three cassette drives and a 4K CPU expandable to 16K bytes. System prices start at under $10,000.

Linolex Model A Processor

The computer's main memory is solid-state with a cycle time of 1.2 μsec/1 byte. Bipolar memories with a cycle time of 240 nsec are used for the read-only memory (ROM) and scratch pad memory.

The 2K 12-bit word ROM is used for storage of the control microprogram, which is used with 32 hardware registers and the scratch pad to handle the main program, 16 I/O channels, cassette drives and CRT.

The Model A can handle storage-to-storage instructions and can perform decimal arithmetic on operands up to 31 digits in length, as well as binary arithmetic. Other operations include indexing, indirect addressing and manipulation of field up to 256 bytes long.

Unit price of the Model A ranges from $7,200 for a 1K byte machine with a single cassette drive to $9,900 for a system with a 4K byte memory and three drives. First shipments are currently being made.

NCR Century 50 Micr-Equipped

DAYTON, Ohio – NCR has assembled a computer system, based on its Century 50 processor, for use in banks that have been considered too small until now to maintain their own data processing facilities.

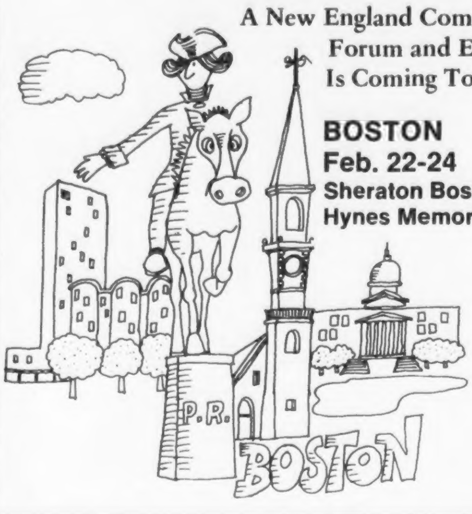
The system includes a 600 document/min Micr reader/sorter, choice of paper tape or punched card reader, and line printer, in addition to the 16K Century 50 CPU.

The availability of Micr equipment in a low-cost system, NCR said, will enable banks to do their own work in-house.

The system is designed to improve accounting and reporting methods, NCR said, and help maintain more direct control of expenses and achieve greater flexibility of operation.

The system will include applications packages specifically designed for small bank use. Demand deposit accounting and savings account management packages are immediately available. An installment loans package will be ready later this year, NCR said. These are in addition to the software normally included with all Century 50 systems.

Intended to compete for the user's attention with such systems as the IBM System 3/10 and the Burroughs B 340, the NCR small-banking system can be leased for $2,640/mo and purchased for $147,500.



Turnkey Analyzer Speeds Diagnoses

PALO ALTO, Calif. – A mini-based, turnkey data analyzer from Hewlett-Packard is designed to provide diagnostic information to a hospital nuclear medicine facility.

The analyzer, the HP 5407A Scintigraphic Data Analyzer, acquires data from any Anger camera or rectilinear scanner and manipulates it for a variety of static, dynamic and time-function studies of the heart, liver, lungs, thyroid, brain, kidneys and other organs, giving more and better data than photographic techniques, HP said.

The basic 5407A consists of an oscilloscope display with grey scale calibration, a teleprinter and a magnetic tape, as well as the minicomputer. Included at no extra cost are the software which is clinically proven, according to HP, system installation, and operator training.

Options which can be added at any time include larger computer memory, additional tape drives, disk units, light pen, large screen and storage displays and display terminals.

Analyzer operations are controlled from a keyboard. Software provided allows several operations to be performed. Data can be accumulated for up to three separate isotopes in either the list mode which gives high resolution and frame rate, useful in cardiac studies, and the histogram mode which gives the fastest count rate.

Data can be framed in any of several formats. The system can normalize it for uneven camera response, produce static or dynamic displays, and can change the frame rate to match the process being viewed.

Arithmetic operations, such as add, subtract, multiply, divide, transfer, and smooth, can be performed with individual frames, groups of frames or constants and frames. Composite frames can be produced by summing frames and smoothing the result.

A light pen can be used to select up to 16 areas to be recalled, integrated and displayed in isometric or contour modes.

Time function curves for selected areas, showing counts as a function of time, can also be computed.

The basic 5407A Scintigraphic Data Analyzer is priced at $49,500. Delivery is 15 weeks from 1601 California Ave., 94304.

Interfaces Connect Peripherals, CPUs For Mini Users

PARK RIDGE, Ill. – Minicomputer users will be able to connect any computer peripheral to the CPU of their choice with interfaces from Digital Associates Corp. (DAC), according to the company.

The company plans to offer a line of products including line printers, disk drives, tape drives and card equipment that are interfaced to most currently available minicomputers.

The first product will be the Potter LP 3000 and LP 3300 printers.

The Potter printers offer the user speeds of 135 line/min for the LP 3000 and 300 line/min for the LP 3330. Characters are formed by a 5 by 7 dot matrix using a rotating helical scanner impacted by voice coil actuated hammers, eliminating the need for drums, chains or balls, the company said.

A choice of two-, three-, four-, or five-year lease plans are available, or the printer and interface may be purchased. Rental for the LP3000 starts at $200/mo, complete with interface, from 710 W. Higgins Road, 60068.

Courier Printers Come in 3 Models

PHOENIX – A medium-speed serial printer from Courier Terminal Systems, a subsidiary of Boothe Computer Corp., is available in three models.

The Execuprint 260 is 360-compatible and can be used as a communications printer with the company's Multi-Station Adapter.

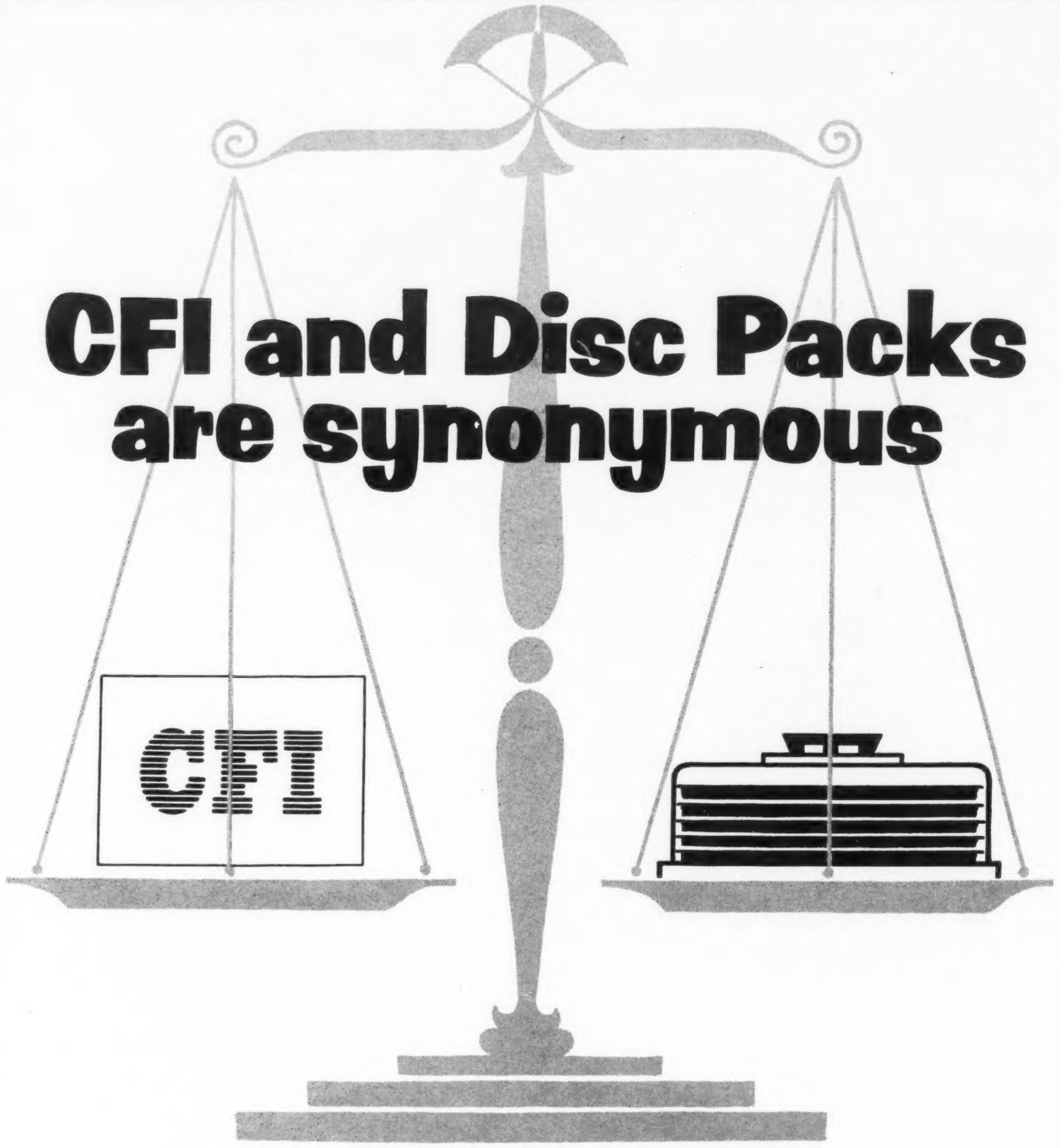
The Execuprint 265 is intended for use as a printing terminal when attached to an EIA 232-C source. Both the 260 and 265 include a 1K input buffer and control logic.

The third version, the Execuprint 261, is an unbuffered version to be attached to the Executerm 265 CRT terminal for local operation.

All three versions can print up to 165 char./sec using a 5 by 7 dot matrix. The print line is 132 characters long and spaced at 6 line/in.

Input rate is 300, 1,200, 2,400 and 4,800 bit/sec, serial.

The Execuprint 260 is priced at $275/mo and sells for $7,800. Maintenance is $50/mo. The 265 is priced at $225/mo and sells for $5,250 with $45/mo for maintenance. The unbuffered 261 has a lease price of $105/mo and sells for $4,200 with $20/mo the maintenance charge. An EIA/EIA interface sells for $300 and leases for $15/mo from 2202 E. University Drive, 85034.



The Professional's Viewpoint

Speak Up for a Better CDP

The most important people involved in the CDP examination are not the members of the certification council, or the people who grade the tests, but the candidates themselves.

After taking the exam, candidates stand on a professional divide. Soon they will know whether or not they are CDPs. Then their opinions about the examination may be biased – sour grapes attitudes from failure, self-aggrandizement from success.

To evaluate the CDP exam policies objectively, unbiased information must be gathered both before and directly after the exam.

One Professional Viewpoint reader/candidate gives some of her pre-exam feelings below, and asks for answers.

The Society of Certified Data Processors hopes to hear from candidates before knowledge of their results can be said to bias objectivity. If you are a candidate, help the profession by sending in your opinions of the strengths (and weaknesses) of the current examination using the 1972 CDP debriefing form.

The Professional Viewpoint Page is produced by the editors of *Computerworld* in cooperation with the Society of Certified Data Processors.

CDP Versus ASA

As one attempting to get both the CDP and the Society of Actuaries' ASA this year, I would like to express the candidate's viewpoint of the CDP exam, and compare the Actuaries's approach to examinations leading to professional certification with that of DPMA's.

The Society's exams are tough! There are five examinations totaling 19 hours of testing.

- Sequential exams allow a student actuary to progress toward certification in reasonable increments. A student with four exams is more valuable than a student with two, and employers recognize this. An ASA doesn't spring full blown from one short examination.
- The Education and Examination Committees for each of the exam parts establish high testing standards. The syllabus is well defined each year; the required reading, in carefully selected textbooks, is known to the student ahead of time, and he has confidence that *only* those items will be covered.

For the CDP exam, there is Cashman's book, and Steiner's *Practice Questions,* but no guarantee from DPMA that only the topics in those texts will be covered.

- DPMA is worried about unprofessional people passing its exam. That is the alleged purpose of the education and experience requirement. The Society of Actuaries doesn't worry about such things, because it knows that anyone who can pass the exams has a thorough professional knowledge.
- DPMA is currently arguing the issue of generalist versus specialist. I know from sad experience that management wants specialists. My own experience has embraced a wide variety of machines and languages, scientific and business applications including MIS, accounting, simulation and operation systems. Consequently, I am almost unemployable.

My six years' experience in data processing isn't relevant to any single business or application; even if I could walk on water in Cobol, unless I've designed an inventory system for a firm in industry X, this particular manager won't hire me.

One reason I have turned to a career in the actuarial field rather than data processing is precisely this problem. As an actuary, my broad training and experience in data processing backed by *meaningful* exams in actuarial knowledge make me a valued and respected employee. Can DPMA say as much for its CDP holders?

Other professional organizations need to be involved in publicizing and promoting the exam.

- I am baffled by the choice of categories and topics covered by the exam and the treatment of this material by Cashman. Is a systems analyst or an operating systems programmer less "professional" than a data processing manager? Is a scientific programmer less "professional" than a business programmer?
- I don't know how "typical" Steiner's *Practice Questions* are, but there are entirely too many questions requiring value judgments which are situation oriented. "Which of the following is least valuable?" "What is the most serious disadvantage of . . . "

Are we to assume, unless otherwise stated, that we are in a five-programmer, Cobol shop, using a 360/30? Or what? And why?

Patricia P. Watt, San Jose, Calif.

1972 CDP Candidate Debriefing

After taking the 1972 CDP exam please fill out and return this form to The Society of Certified Data Processors, c/o The Professional's Viewpoint, *Computerworld,* 797 Washington St., Newton, Mass. 02160.

1. Which were the two most relevant sections of the exam?
1.________________ 2.________________
Why?________________________________
(Continue any answers on a separate page, if necessary.)

2. Were any sections not relevant or out of date? ☐ Yes ☐ No
Details:________________________________

3. Which were the two most up-to-date sections?
1.________________ 2.________________
Why?________________________________

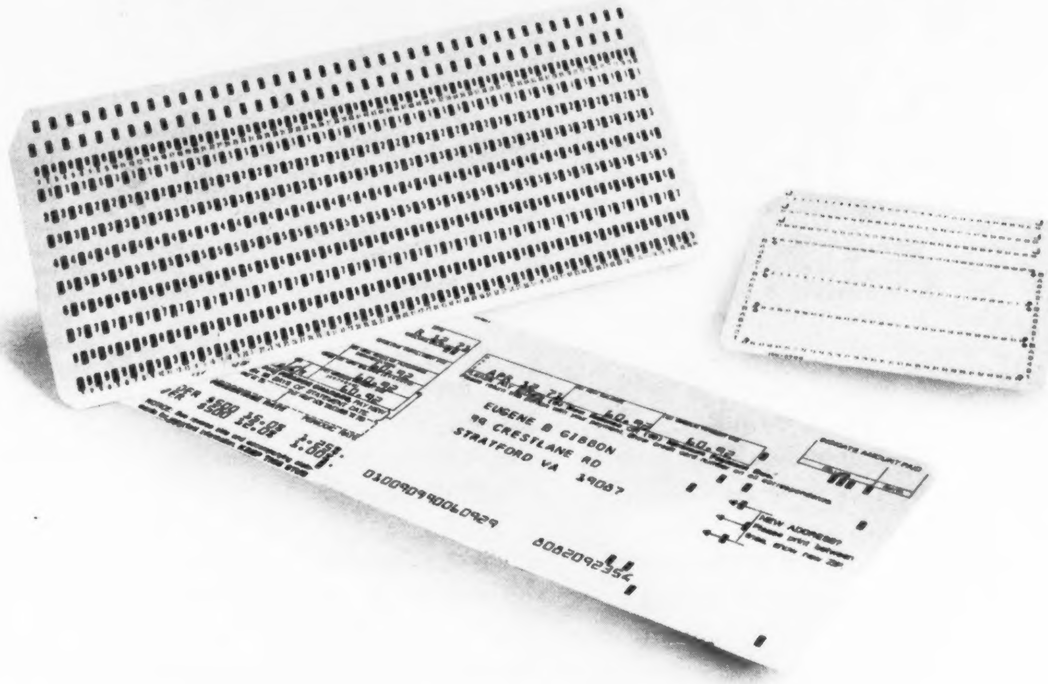
4. Did you find any questions potentially ambiguous? ☐ Yes ☐ No
Details:________________________________

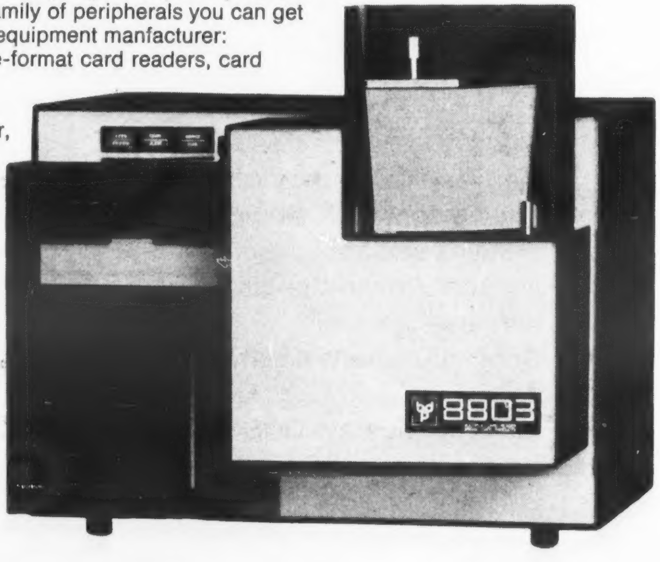
5. How did you prepare for the exam?________________

6. What advice would you now give to another candidate?
____

7. What suggestions would you make to the exam authorities?
____

Name________________ Address________________





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1972 SJCC: Back to Basics, Results

By a CW Staff Writer

MONTVALE, N.J. – It's "back to basics" for the Spring Joint Computer Conference, according to an official of the sponsoring organization, the American Federation of Information Processing Societies (Afips).

The technical program for the 1972 SJCC in Atlantic City will feature 37 technical sessions and 130 papers, more than any "joint" since 1968. The Proceedings will be separated into two volumes.

Dr. John E. Bertram, IBM director of engineering, programming, and technology, has been appointed general chairman of SJCC '72. He will head a New York-based steering committee responsible for overall planning and implementation of the conference, to be held at Convention Hall, May 16-18.

The conference will feature discussions in six general categories: general applications, scientific applications, general and special purpose hardware (with emphasis on LSI), programming and software, computer education and theory and administrative issues.

There will also be two special evening sessions, one on program documentation and the other on the "scope of computer systems design and research" in a university setting, Afips reported.


Dr. John E. Bertram

The technical sessions will emphasize programming and software, with 12 of the 37 meetings devoted to that topic, Afips said. The theme of SJCC is "Developing Technology: the Last Five Years, the Next Ten Years."

There is less emphasis on the "platitudes" and "blue sky" social implications issues of the past, an official said, but more time will be devoted to specific results and recommendations. For example, there will be discussions on manpower and training, plus education at all levels (secretarial, university and CAI).

"I guess it's a return to basics," an official noted. There is a continuing strong interest in the social side, but from the viewpoint of examining specific studies or occurrences, not vague generalities.

Societies

Afips President Keith Uncapher announced the appointment of Jerry L. Koory as chairman of the Afips Joint Computer Conference Committee. Koory was chairman of the 1969 FJCC, and replaces Dr. Albert S. Hoagland, new president of the IEEE Computer Society.

Words, Not Data

WILLOW GROVE, Pa. – Interest in computer processing of words, rather than data, is the common bond of members of a new society, the International Word Processing Association (IWPA).

Purpose of the new group is "to foster interest in the new technique" which may ultimately "rival data processing as a cost reduction factor in business," an official said.

Robert C. Walter, executive director of the Administrative Management Society, will serve as volunteer director of administration for the association, which will function as an affiliate of AMS.

Word processing brings "a high degree of automation to the transfer of ideas to paper or electronic storage," an official noted.

Information is available from IWPA, AMS Building, 19090.

Applications Ready For DPMA Grants

PARK RIDGE, Ill. – Advanced doctoral candidates interested in studying computer management and decision-making can obtain financial assistance from the Data Processing Management Association.

R. Calvin Elliott, DPMA executive director, announced that applications are being accepted for the 1972 research grant. The annual $2,000 award is made available to selected, qualified candidates who will perform research in preparation for doctoral dissertations in DP systems and management.

Decision-Making

Research must be directed towards methods of management planning, control, organization and decision-making, using computer science.

Applications, to be filed by May 1, are available from DPMA International Headquarters, 505 Busse Highway, 60068.

Australian DP Conference Exhibit Space Sold Out

BRISBANE, Australia – More than 200 technical papers are being considered for presentation at the Fifth Australian Computer Conference here May 22-26. About 20% of the total came from abroad, officials said.

Exhibit space has been sold out, and 26 companies from Australia, the U.S. and Europe will display their wares.

The conference is sponsored by the Australian Computer Society. Not open to the general public, the conference is designed "primarily" for the 1,500 delegates expected to attend, officials stated.

Selected student groups and guests will be invited by exhibitors, an official noted.

... From Robots to Education

SAN FRANCISCO – Robot research and social implications, secondary school education and file management systems will all be discussed at the ACM Northwest Regional Conference here April 8.

The technical symposium will be held at the Miyako Hotel. Parallel sessions will also cover machine architecture, man/machine interface, graphics and programming methodology.

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RCA

Computer Programming Treated as Human Activity

By Eric A. Weiss

Special to Computerworld

The Psychology of Computer Programming, by Gerald M. Weinberg, State University of New York, 288 pages, Van Nostrand Reinhold Co., New York, 1971, $9.50.

Book Review

This book takes the novel position that programmers are human and that programming is an individual performance and a social activity. The position conflicts with the assumption of many managers that the programmer is just another one of the machines.

Weinberg, an expert author and a master teacher, who has been programming and managing programmers since before Fortran, describes clearly, interestingly, authoritatively and non-technically how and why programmers behave as they do, and how human managers and programmers can successfully interact in the programming environment.

This topnotch book should be read by every manager who has ever had any trouble managing programmers, and what manager has not? Managers will find some hints and precepts drawn from psychology which can lead to more efficient and effective functioning of programming organizations.

Programmers should read the book, but may not want to since it is not always comfortable to see yourself as others see you.

Programmers will be attracted to the last section of the book which discusses the tools of programming from a psychological point of view.

This is a large first class contribution that may, as the author hopes, "Trigger the beginning of a new field of study, computer programming as a human activity."

Eric A. Weiss is corporate computer sciences consultant for Sun Oil Co., the author/editor of six textbooks on computing and chairman of the ACM Publications Board.

Library Cataloguing Improved

HANOVER, N.H. – An experiment involving the practical application, through long-distance operation and testing, of a computer-based system to achieve a cheaper, more efficient production of catalogue-card records for library use, will be undertaken in the next six months.

The 725-mile gap between Dartmouth College and the Ohio College Library Center (OCLC) in Columbus, Ohio where OCLC has facilities for producing library catalogue cards from magnetic tape input to a computer, will be spanned by a special telephone line.

At the Dartmouth end, the college's Baker Library, will be a CRT terminal, and at the Ohio end will be OCLC's Xerox Sigma 5. Stores in the OCLC computer are cataloguing data from magnetic tapes prepared by the Library of Congress in Washington, covering all English-language books published since 1969, approximately 200,000 in number.

An operator at a teletypewriter in Hanover will ask the computer for desired cataloguing entries for new acquisitions in one of three ways: by use of the Library of Congress card-identification number for the volumes, by typing the first three letters of the author's name and the first three letters of the first word of the book's title (disregarding articles), or by inputting the first three letters of the first word and the first letters of the next three words of the title.

In seconds, the cataloguing information will be relayed from Columbus and flashed on Dartmouth's CRT. The Hanover operator can then signal Columbus he wishes to be supplied with catalogue cards for the particular item being displayed. Through computer programming tailored to the precise needs of the Dartmouth library, the requisite number of cards will be produced at Columbus.

Part of a joint endeavor of the Dartmouth College Library and the New England Library Information Network (Nelinet), a project of the New England Board of Higher Education, the experiment is being made under a grant to Nelinet of $53,589 from the Council on Library Resources in Washington.

POSITION ANNOUNCEMENTS

OPPORTUNITIES

GEN. MGR. – Data display products Low and high speed CRTs and related ancilliary items. $35,000
SYS. APPLIC. MKTG. – Data Communications for brokerage/financial applications. $20,000
SYS. ENG'G. – Data Communications products. Many situation and several locations. $20,000
SLS. MGR. – District, CRT displays, Mil and commercial. DC. $25,000
SLS. REP. – Large Core and IBM add-ons. Chicago, N.Y., D.C., L.A., Boston, N.J. $18,000
SLS. REP. – Data Communications, CRT's, digital products, N.Y., D.C., Chicago, L.A., Dallas, Albany, Phila., Atlanta, other major cities. $18,000
APPLIC. ENGR. – Computer and Communications systems. All major cities. $15,000
FLD. SVCE. – Mainframe and peripherals. All cities. $15,000
MKTG. ANALYST – Data Communications. Dallas, SFO, NY, other major cities. $16,000

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DIAGNOSTIC PROGRAMMER

Storage Technology Corporation, an expanding manufacturer of computer peripheral equipment, is seeking a programmer with a minimum of 2 years experience in BAL programs that directly operate IBM S/360 or S/370 computers. Emphasis is placed upon computer hardware exposure and should include diagnostics, ERPs, access methods or related experience. This position is in the Product Planning and Programming section of Advanced Development Department.

Interested individuals please send resume to the Manager of Personnel:

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Report # 2 Magnetic Tape Drums — March 8 Issue (Adv Close February 25)
Report # 3 Disk Packs, Disk Drives, Double Density — March 15 Issue (Adv Close March 3)
Report # 4 State of the Art — March 22 Issue (Adv Close March 10)

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CANADIAN DEVELOPMENT DIVISION OF CONTROL DATA

The Canadian Development Division of Control Data has undertaken the design, development and manufacture of a new large scale digital computer system.

SENIOR LOGIC DESIGNER

The Division requires graduate electrical engineers or equivalent who have had four or more years computer logic design experience and who possess management capabilities. The candidate must have a thorough working knowledge of large scale central processors. Responsibilities will include the design and development of the central processor for the new family of computers currently being developed (File 03).

POWER ENGINEER: Electrical Engineer with one to four years experience in 400 Hz to design, develop and research power systems (File 06).

DIAGNOSTIC ENGINEER: Diagnostic programmers check out, logic design or customer engineers with three or more years experience in large scale systems to develop on-line and off-line diagnostics (File 05).

These positions are available immediately. Candidates should be Canadian citizens or individuals willing to relocate to Canada as landed immigrants. Interested candidates are requested to forward a complete resume in confidence to:

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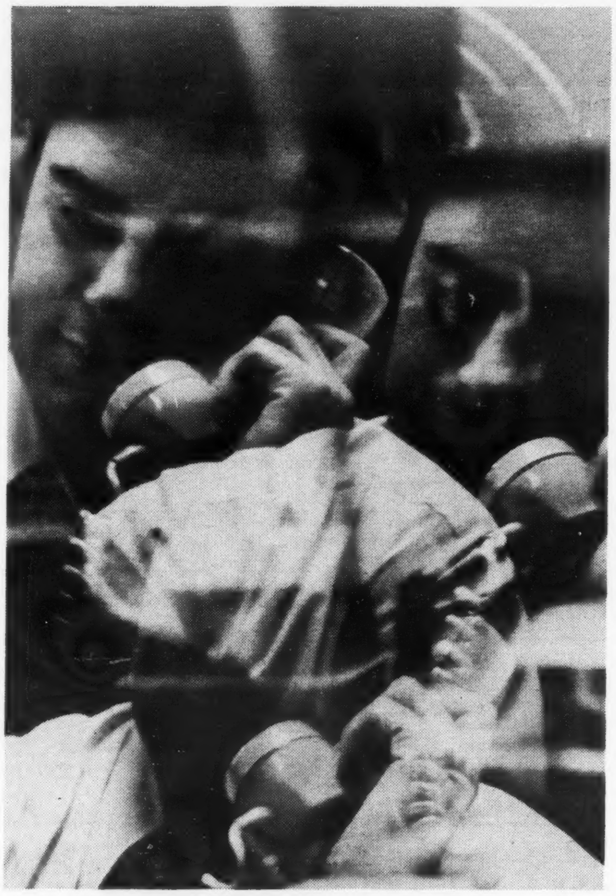

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computer industry

February 16, 1972 **a Computerworld news section about the nation's fastest growing industry**

CI Notes

Roberts Resigns at Ampex

REDWOOD CITY, Calif. – William E. Roberts has resigned as chairman and a director of Ampex Corp. in the wake of stockholder suits and a $40 million loss for the year.

The resignation came just days after stockholders charged the officers of the company with conspiracy to violate the securities laws by concealing facts about its financial condition.

The suit also charged Roberts benefited from "insider" information on the sale of a large part of his holdings in Ampex.

Point-Of-Sale Booming

NEW YORK – The point-of-sale market, valued at $20 million in 1971, will grow to $175 million by 1975 and will reach $350 million by 1980, according to a Frost and Sullivan report.

The study said there are over 1.5 million potential customers for point-of-sale equipment and that 50,000 of those have sales over $1 million a year.

Demand for Technical People Up

NEW YORK – Demand for technical people is likely to rise in 1972, according to the Engineer/Scientist Demand Index. The last quarter of 1971 was the strongest of the year, according to index keeper Deutsch, Shea & Evans, a manpower advertising firm.

Demand for technical types was low for the year as a whole, however. The index registered 41.5 in 1971 compared with 1970, when it was 54. In the good days of 1966, demand peaked at an average of 190.3

Supershorts

PDA Systems, Inc. and Charles B. Wang have filed counterclaims for $4.35 million against National CSS, Inc., charging violation of antitrust laws. They claim that certain computer programs, which National claims as its own are the property of PDA.

– – –

Wescon has issued a call for session proposals with letters of intent to propose due by March 24.

– – –

The Honeywell Institute of Information Sciences, in Burlington, Mass., has been granted accreditation here by the Accrediting Commission of the National Association of Trade and Technical Schools.

– – –

Inforex, Inc. has announced that a new partnership formed by U.S. Leasing International, Inc. and the St. Paul Leasing Co. has entered into an agreement for purchase of Inforex equipment. The new agreement replaces a previous agreement signed in October 1970. The revised agreement, effective Jan. 1, 1972, provides for sales of $7.1 million of equipment.

– – –

Digital Computer Controls, Inc. is now in full production of the D-116 MSI minicomputer and has shipped seven D-116s to seven customers.

– – –

Ampex claims to have shipped $500,000 worth of its new 1800 Series core memory system since its introduction in April and currently has an order backlog exceeding $5 million.

Call for IBM Breakup

Senate Opens Hearings on Monopolies

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The Senate Antitrust and Monopoly subcommittee has opened this year's round of hearings on monopoly matters with a call for the breakup of "large concentrations of economic powers such as IBM," from Joan Van Horn, president of VIP Systems Corp.

In opening the recent hearings here, Sen. Phillip A. Hart (D-Mich.) declared that "we must find ways to inject competition into our economy if we are to rid ourselves of wage and price controls.

'Boss Bossed'

"Our economy," he said "is dominated by concentrated industries which do not respond to demand as competitive enterprises would. Instead of the consumer being boss, he has ended up being bossed by these industries which . . . are not actually competitive at all."

The four-day "symposium" on "Controls or Competition" is seen by many observers here as the opening round in what may be a year-long attack on the nation's present antitrust enforcement.

Spokesmen, like Van Horn, opposed to IBM's dominance of the computer industry are expected to get much attention this year before various Senate and House committees concerned with the question.

"Firm steps must be taken now, using existing laws, to break up our large monopolies and large blocks of economic powers," Van Horn told the opening round of hearings.

"Divestiture is better for employees and shareholders, as well as for the economy and the general public; it is bad only for executives' salaries and egos," she added.

"There is a growing concern throughout the nation that the system is no longer working for the people and that big government solutions are failing to solve many of our pressing problems," she declared.

As a "specialist" in DP, Van Horn said she was concerned "with the erroneous notion that our new technology, and especially our computers, make a controlled economy now possible whereas it was not before.

"This is not true. Computers are neither our villains nor our saviours, but like atomic energy, they can be used to serve or destroy the society that produced them," she said.

"Congress," Van Horn added, "must grapple with the problems of economic concentration now, to revive our economy and the people's faith in our institutions.

"Arguments for weakening the antitrust laws in the name of international trade should be dismissed. Monopolies here will not make us more competitive overseas."

In addition, Van Horn called on Congress to reassert "without delay . . . its role in monitoring the enforcement of its laws by the Executive, and effective competition, and strengthen private and third party enforcement of existing statutes."

Specifically, she urged Congress to:

- "Insist on even-handed enforcement of the existing antitrust laws, with adequate funding
- "Combine FTC and Justice antitrust enforcement functions
- "Define explicitly the rules for automatic divestiture, such as: major segment of our economy, financial size or percent of market; dominance of an important segment of industry, consumer budget or vital means of production (IBM)
- "Reduce the patent protection period, to discourage the use of the patent laws to suppress innovation
- "Revise the existing antitrust laws . . . to strengthen the potential for private and third party suits
- "Revise the existing antitrust laws . . . to define the base for calculating treble damages as either the plaintiff's losses or the defendent's gain, whichever is larger."

In addition, she called for the establishment of an agency, like the Government Accounting Office, reporting to Congress to monitor "on a regular basis" the enforcement of the antitrust laws.

Minis, Peripherals Demand Seen Strong in France, The Netherlands

WASHINGTON, D.C. – Although projections of growth trends in the French and Dutch marketplaces are lower than in recent years [CW, Feb. 9], reports from the Commerce Department reveal increasing demands in some areas, particularly terminals, magnetic tape units, disk drives, optical character recognition equipment and minicomputers.

In France, the growth rate of small computer installations between 1967 and 1970 reached 129%. The total number of DP installations rose by 25% from 1969 to 1970, with small computers increasing by 35% and large systems by 39%. Medium-size installations rose 7%.

Process control applications increased 54% in the year, and small process control computers outpaced all others, with a 70% rise.

Peripherals Growth

The number of peripherals is expected to increase by 75% between 1971 and the end of 1975, Commerce noted, citing a Diebold France study. Data transmission terminals will lead the way, the study predicts, provided the French government upgrades the telephone system as planned.

Despite the French Government's policy of generally refusing to permit U.S. software firms to establish subsidiaries in France, Commerce said American firms can grab a piece of the projected 20% growth rate.

In conjunction with the French Government's plans to subsidize R&D efforts of important software firms and to provide financial aid to large purchasers of French-designed software, emphasis is being placed on the development of software packages. Sales of packages are estimated to be increasing at an annual rate of 25% to 30%.

Commerce warns American firms interested in the French market that potential buyers are "extremely wary of imports that are sold without a full service warranty . . . many U.S. manufacturers have found it advisable to establish their own servicing facilities in Europe."

In The Netherlands, "demand for remote access multiprogramming computer systems is clearly a major emerging trend," according to Commerce. Ultimately, this could lead to computer utilities, if the national telephone network is improved.

Demand is currently strong for medium-size multiprogramming systems with in-house data communications facilities and low-cost small computers. With the growth of the mini market, conversational time-sharing and remote access batch processing are expected to increase.

The peripherals market is expected to grow rapidly, particularly disk storage and "sophisticated" communications terminals.

Reflecting the growing popularity of minicomputers in The Netherlands, Digital Equipment Corp.'s installations almost doubled in the first six months of 1971, from 78 to 144; Honeywell-Bull grew from 289 to 359; IBM from 531 to 682. Univac's installations rose from 109 to 130, and Philips from 143 to 168. Burroughs and Control Data Corp. added nine and 10 installations respectively.

DP Boosts Honeywell Earnings

MINNEAPOLIS – Gains in the computer field boosted Honeywell earnings and revenues in both the fourth quarter and for the year as a whole.

And at the same time, James H. Binger, chairman, said trends in "a number of areas of the business" indicate 1972 will be a good year also.

In the fourth quarter, Honeywell earned $35.3 million or $1.96 per share on revenues of $578.8 million from operations. This is up from the $20.7 million, or $1.20 per share, earned on sales and rentals of $511.1 million in the same quarter a year ago.

Profits Rise

Profit from operations for the year as a whole rose to $65.7 million, equal to $3.70 per share on sales of $1.95 billion, compared to $57.5 million, or $3.34 per share on sales of $1.92 billion a year earlier.

The firm also had extraordinary gains of $1.3 million or seven cents per share in the last quarter and $3.5 million or 20 cents per share for the year.

A year earlier, Honeywell had extraordinary gains of $3.6 million or 21 cents per share for the fourth quarter and $4.2 million, equal to 24 cents per share, for the year.

The 1970 results are restated to account for the merger of GE's computer business into Honeywell during the year.

Computer operations accounted for about 49% of the firm's total business in 1971, up from 45% in 1970, according to Binger.

Overall, revenue for the computer operation accounted for $950 million of the firm's revenues, up 11% from 1970, Binger added.

64-bit Memory Uses Sapphire Chip

PRINCETON, N.J. – Claimed to be the world's first commercial silicon-on-sapphire computer memory, a 64-bit random access unit from Inselek Co. is designed for use in scratchpad, cache and buffer applications.

The unit is expected by the company to challenge the dominance of silicon-only approaches now used in the production of integrated circuits, transistors and related solid-state components.

The SOS devices are produced in a silicon "veneer" grown on a sapphire chip and isolated from each other by etching away the unused silicon.

Internal connections are made by laying down a network of metal paths between silicon "islands" and external connections by bonding fine aluminum wires to them from above, the company explained.

The memories are described as having the speed of bipolar arrays and the low power requirements and high information packing densities of the MOS types. Typical access time is less than 60 nsec with a read cycle of 85 nsec. The 64-bit memory is organized into 16 four-bit words and is compatible with TTL circuits at all inputs and outputs.

Fox 2 Has Two Systems

FOXBORO, Mass. – The Fox 2 series of process managements and control systems from the Foxboro Co. is intended to complement the company's Fox 1 systems introduced last year.

The smaller of the two Fox 2 systems, the Fox 2/10, is an all-core system with all data and programs stored internally in the computer. The Fox 2/30 is intended for medium to large applications.

The Fox 2/10 provides the full spectrum of plant alarming and control functions plus data acquisition, reporting, operator communications, and complete facilities for developing new programs, Foxboro said.

Modular in hardware, the design is said to allow a customer to build the system suited to his needs, with as little as one typewriter implemented. A Fox 2/10 system in a minimum usable configuration, including process I/O, costs less than $50,000.

The Fox 2/30 provides for automatic point processing, supervisory, sequential and regulatory control, computation, report generation, logging, on-line new program development, operator communications and plant optimization.

One or more teletypewriters, operator's console, one or more typers and a CRT terminal can be implemented. Preprogrammed software packages are supplied. Prices start at $80,000.

Alden Units Give CRT Hard Copy

WESTBORO, Mass. – The Alden 600 and Alden 400 "Push to Print" recorders, which provide instant graphic hard copy from slow scan CRTs, are plug-to-plug compatible with Tektronix 611 or 611 Mod 162C Storage Display Units and Robot's Model 80 voice band television cameras.

Supplied with synchronous drive motor, sweep trigger output pulse and internal marking amplifier, the units utilize the Alden flying spot recording technique to generate a 600-line frame in 20 seconds. The Alden Electronic & Impulse Recording Equipment Co. is at Alden Research Center, 01581.

Other New Products

Intel Corp., Santa Clara, Calif., has introduced the system in-16, a TTL-compatible memory system. Using Intel 1103 dynamic MOS RAMs, the system stores 4K 9-bit words on one 7-in. by 10-in. PC board.

Designed to link monitoring and control devices to standard DTL and TTL logic, the NJ series logic modules from Xerox Data Systems, El Segundo, Calif., use photo isolation to provide high noise rejection and up to 1,500 V of ground isolation.

– – –

A ROM system capable of accessing 1.6 Mbits of storage at .075 cent/bit has been put into production by Memory Technology, Sudbury, Mass.

– – –

A low-cost, high performance R-2000 photoelectric tape reader that operates at 200 char./sec asynchronously and up to 300 char./sec continuously has been announced by Tally Corp., Kent, Wash.

– – –

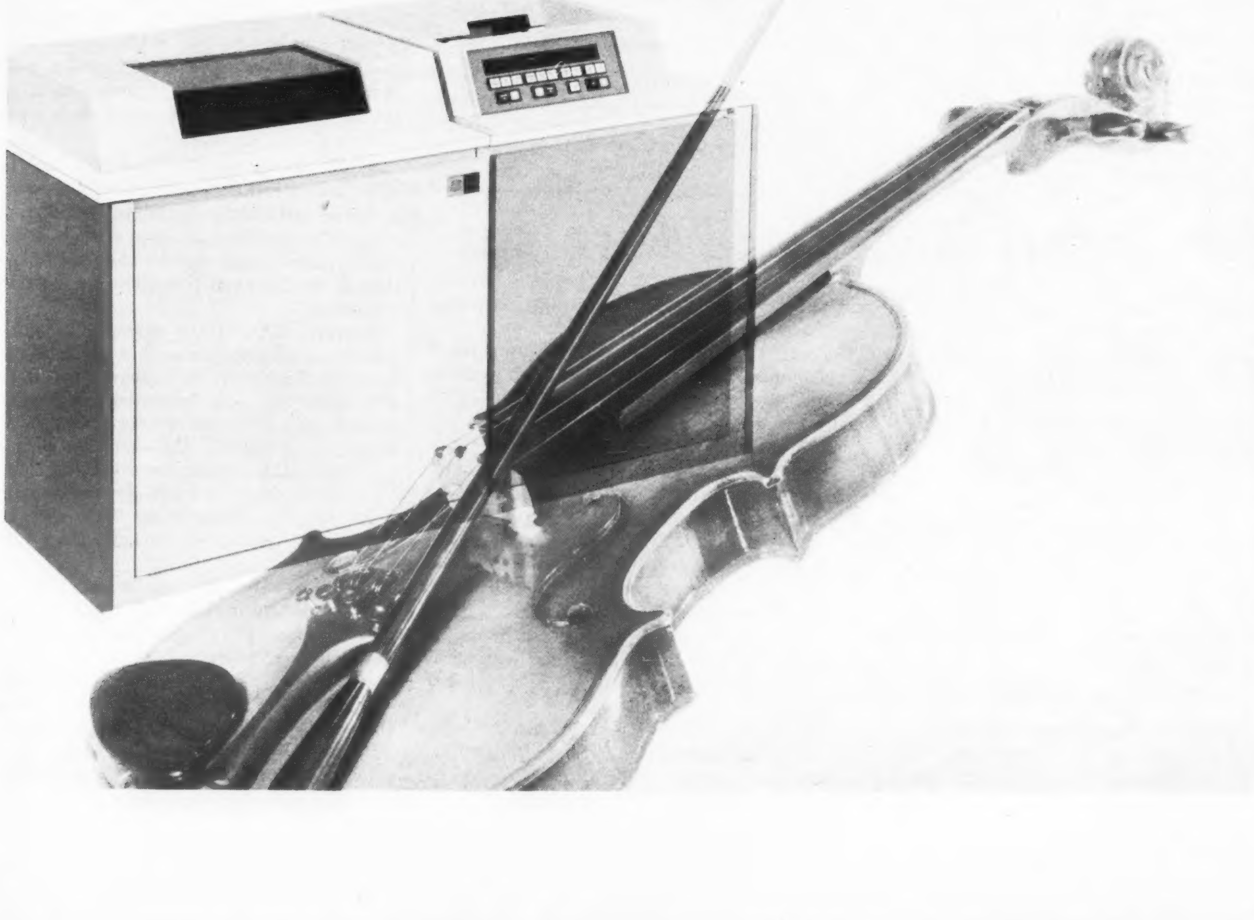
Data Printer Corp., Northport, N.Y., has announced the availability of two new medium-sized impact line printers featuring variable speed operation depending on the number of print columns utilized.

– – –

The Monostore IV/Planar is a complete MOS RAM system packaged by Monolithic Systems Corp., Englewood, Colo., on a single card with capacities ranging from 1K to 4K by 20.

– – –

The C450 450 card/min reader from Peripheral Dynamics, Norristown, Pa., is available in table top and rack-mounted versions and stresses simplicity and ease of maintenance.



Conoco Installs First Sigma 8 For Seismic DP Use, Simulation

PONCA CITY, Okla. – The first Sigma 8 computer from Xerox Data Systems has been installed at Continental Oil Co. here for seismic data processing operations.

The Sigma 8 joins a Sigma 3 at the installation. The 64K system will be used to reduce and analyze all seismic data recorded by oil exploration crews at Conoco.

Graphic displays will also be used with the system to simulate and model oil field operations and pilot plant designs.

Other Orders, Installations

The Free University of Berlin has ordered a Control Data Cyber 70 Model 72 system to replace a CDC 3300. The new system, valued at $951,000, will be installed in the second quarter of 1972.

Orders & Installations

The Tennessee Valley Authority has ordered a $2.1 million direct digital control system from GE. The system will be based around a GE-PAC 4070.

Semiconductor Test Systems, Inc.'s FTS-1000 memory exerciser has been installed at Advanced Memory Systems. The unit is being used for production testing of semiconductor add-on memory.

Two Ampex Model ECM-65s extended core memories have been leased by Western Electric.

The Computerized Vocational Information System, DuPage County, Illinois, has installed 31 Bunker Ramo 2206/17 CRTs at participating schools and colleges. The units enable students and guidance counselors to access a central 360/40.

Computer Wares, Inc. software packages have been purchased by Birmingham Trust National Bank, Levinson Steel Co. of Pittsburgh and Channel Companies, Inc., Whippany, N.J.

Birmingham Trust installed Cats-A/P, an accounts payable-cash requirements package; Levinson ordered the Cats-I/M, an inventory management system, and Channel bought the Automated Retail Accounts Receivable System (Arears II), for use in its credit card operations.

Sunkist Growers, Inc., Sherman Oaks, Calif., has installed two Teleswitcher DCS-5000 automatic store-and-forward message-switching systems made by Computer Control Systems, Dallas.

Illinois Bell Telephone Co. and Rochester Telephone Corp. have ordered direct access data management systems from Computer Consoles, Inc., Rochester, N.Y.

The D.M. Read department stores in Bridgeport, Danbury and Trumbull, Conn., have installed Credit Systems Inc.'s Credit-Chek, an electronic credit authorization system.

New York State University College of Forestry at Syracuse has ordered a Control Data 3200 system for student training and forestry research. Temple University, Philadelphia, has installed a second CDC 6400 for time-sharing applications.

United Air Lines, Denver, Colo., has ordered 400 CDC 869 disk packs to store and provide access information for its Apollo reservation system.

Computer Users' Forum & Exposition

The National Computer Conference That's Coming To You

The Need

The computer age is moving into a new stage. Until now, computer makers have dominated the scene, introducing one breakthrough after another in the state of the art. The time has come to pause and consider the computer user. You need more opportunity to improve on the systems you now have.

The Solution

A Computer Users' Forum, run by professionals and designed to bring regional users together in manageable groups to discuss mutual EDP problems with other users, and with regional and national experts . . . and a chance to study and evaluate new equipment and services that will be shown in the presentations of leading EDP suppliers comprising the Exposition.

The Format

Each Day	9:00-9:40	Keynote address by a nationally known expert – an independent, not a vendor – on the day's main subject. Sets the stage for discussions.
	9:40-10:30	Panel discussion led by regional experts chosen for their progressive management principles. Questions encouraged.
	10:40-11:45	Workshops – panel members conduct separate workshops. Your specific questions fielded, worked out.
	12:15-1:30	Conference luncheon – keynote speaker summarizes chief points covered during panels and workshops.
	1:00-9:00	Exhibits open, stay open til 9. Exhibitors will show the latest in hardware, software, services.

The Subjects
First Day: Data Entry

Keynote speaker; Lawrence Feidelman, President, Management Information Corp., Cherry Hill, N.J.; Editor, *Data Entry Today.*

Panels and workshops will be grouped by these four subjects:

- Keypunch replacement; key to tape, disc and cassette devices.
- OCR.
- Intelligent terminals – distributed processing.
- Direct data entry/source data automation.

Second Day: Data Communications: The Choices

Keynote speaker; Dr. Dixon Doll, Data Communications Consultant, faculty member, Graduate School of Business, Eastern Michigan University.

Panels and workshops will be grouped by these four subjects:

- Communications equipment from mainframe makers and common carriers.
- Communications equipment from independent suppliers.
- Data transmission via private (lines, microwave) networks.
- Data transmission via carriers (lines, microwave).

Third Day: Operational Efficiency

Keynote speaker; Charles Lecht, President, Advanced Computer Techniques, N.Y., N.Y.; author of *Managing Computer Programming.*

Panels and workshops will be grouped by these four subjects:

- Core extensions.
- System/utility software modifications.
- Independent peripheral usage.
- Dedicated systems vs. general purpose computers.

Panel Members & Workshop Leaders

The regional experts who will run the panels and workshops have been chosen from a wide range of firms and institutions. Some will participate in more than one session, depending on their experience and expertise.

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01 Mining/Construction/Oil & Refin.
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03 Manufacturing (other)
04 Utilities / Comm. Sys. / Transport.
05 Wholesale / Retail
06 Finance / Insurance / Real Estate
07 DP Serv. Bureaus / Software / Plann.
08 Business Services (except DP)
09 Education / Medical / Legal
10 Federal, State and Local Govt.
11 Communications / Printing / Publ.
12 Other:________________

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Exposition Sites & Forum Schedule Please Check City Where You Will Attend

City	Location	Dates
☐ New York	Americana	Feb. 29-Mar. 2
☐ Washington, D.C.	Washington Hilton	Mar. 7-9
☐ Atlanta	Regency Hyatt House	Mar. 14-16
☐ Dallas	Market Hall	Mar. 21-23
☐ Los Angeles	Ambassador	Apr. 4-6
☐ San Francisco	Fairmont	Apr. 10-12*
☐ Chicago	Palmer House	Apr. 18-20
☐ Detroit	Cobo Hall	Apr. 25-27

**Monday-Wednesday Schedule*

Please register me for:
☐ **DATA ENTRY – Day One;** ☐ **DATA COMMUNICATIONS: The Choices – Day Two;**
☐ **OPERATIONAL EFFICIENCY – Day Three;** ☐ **EXPOSITION ONLY**

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☐ $5.00 for Exhibits only.

Proprietary Software--Part IV

Software Products Can Change Today's Programming

By Martin Goetz
Special to Computerworld

The value of all software produced in the U.S. is estimated at $11 billion in 1972. Although the major portion of this amount will be derived from application programs developed by computer users themselves, a considerable percentage will involve proprietary software activities.

Another more recent survey for 1972 suggests a gross revenue of $17.6 billion for the entire computer industry. Of this amount, it is estimated that $1.47 billion will be spent for contract and package software.

Changing Priorities

This last figure has far-reaching implications. It not only indicates the significant impact of software on the entire computer industry in the next decade, but also the changing priorities within the software industry itself.

This is evidenced by the increasing emphasis being placed each year on producing generalized program packages.

Software product development potentially is capable of changing the complete programming environment that exists today. Unfortunately, such products, whether created by independent software houses or hardware manufacturers, have not fulfilled their potential by keeping pace with demand.

As a result, the quality of much of today's software products does not meet many users' standards. Once again, this situation has been created primarily by the non-competitive climate resulting from the purportedly "free" software being offered with computer hardware.

In analyzing the future direction of the software industry, two basic questions must be answered.

Are U.S. laws adequate to protect software products?

At present, the probability of success for any proprietary software product is not determined solely by its demonstrated worth and capabilities.

Rather, the position of computer manufacturers on the unbundling issue has the ultimate effect on software sales. In the U.S., there are antitrust laws prohibiting tie-ins, restraint of trade and unfair pricing.

No Cases

Thus far, there have been no court cases challenging the exact interpretation of these laws with respect to maintaining a truly competitive environment within the software industry.

Complete protection for the seller requires, as a start, guaranteed separate and fair pricing for hardware and software. The 1969 unbundling announcement was a good omen.

Recently, the Patent Office announced it would accept software patent applications. Moreover, it has actually awarded software patents. Hopefully, the availability of patent protection will motivate a significant number of software companies to continue investing in software development.

How can software companies survive?

Software manufacturers must concentrate on proprietary products with basic designs flexible enough to be adapted to a wide variety of different applications.

Minimize Expenditures

The availability of such products would minimize expenditures currently being made to support in-house programming staffs. Users would no longer have to develop their own application programs in the absence of suitable proprietary products; nor would they be burdened with the costs involved in adapting, maintaining and enhancing substandard programming packages.

In addition to emphasizing variety in applications, stress must be placed on the quality of software offered for sale. Quality software can be defined as software which will optimize the performance and output of the hardware on which it will run.

Today's hardware capabilities are usually more than adequate for most user needs, but much of today's software prevents realizing these capabilities. Unfortunately, it is the computing equipment which is being continually improved, rather than the area in more immediate need of attention – namely, software.

New hardware can boast of faster execution times, larger memories and more efficient peripheral devices. Without resolving present software deficiencies, however, such hardware improvements will never be seen by the user.

Closely allied to improving software quality is developing even higher level languages than those presently available.

For example, although Cobol has demonstrated significant advantages in commercial applications, certain drawbacks are also apparent. The software industry would benefit immensely from investigating the shortcomings of present high-level languages in order to create languages even less restrictive, more consistent and easier to code.

Lack of Controls

Finally, the software industry, if it is to succeed, must take into account the lack of quality controls and standardization. Needless to say, this problem area cannot be totally resolved by the independent action of software manufacturers.

For controls and standards to be effective, all parties directly affected by their implementation must participate in creating them. Thus, not only software manufacturers, but hardware manufacturers and users alike, should be represented in a joint regulatory board whose suggested standards ultimately would receive government sanction.

In the next few years, software manufacturers will continue to face severe economic and growth problems. Despite any odds, however, much still can be done from within the software industry to improve the overall qualty and reliability of its products. Such advances will contribute not only to the survival of proprietary software, but perhaps to the stability of the entire DP industry as well.

Goetz is vice-president of proprietary products at Applied Data Research.

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Varian, SEL Show Earnings Rise

PALO ALTO, Calif. – Two makers of small computers, Varian and Systems Engineering Laboratories, reported improved profit pictures.

In the first quarter of fiscal 1972 Varian's income from operations and before extraordinary items totaled $244,000 or 3 cents per share, compared with $72,000 or 1 cent per share for the year ago period ended Dec. 31.

Sales were approximately level, $46.4 million compared with $46 million in the like 1971 period.

Including special items and charges, earnings for the quarter were $502,000 or 7 cents per share compared with a loss of $1.6 million or 23 cents per share in 1971.

Extraordinary items boosted earnings by $258,000 or an additional 4 cents per share. In the 1971 period, extraordinary charges against income amounted to $1.7 million or 24 cents per share.

Order receipts were $47.9 million in the first quarter, compared with $43.8 million for the same period last year, Varian said.

Although revenues at Systems Engineering Laboratories, Inc. declined during the first half of fiscal 1972, earnings rose sharply.

In the period ended Dec. 24, earnings before special items totaled $379,380 or 15 cents per share. With a $201,832 extraordinary gain, earnings totaled $581,212 or 23 cents per share.

Earnings for the year ago period were $38,732 or 2 cents per share.

Revenues were $7.1 million, down from $8 million in the 1971 half year.

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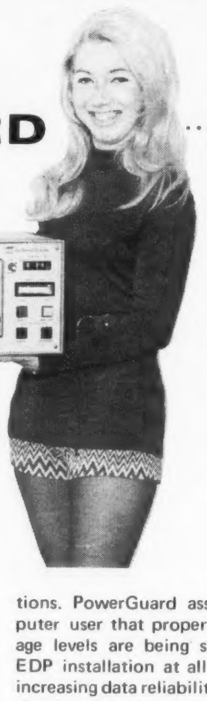
IBM Expects Higher Profit In '72; Withholds Specifics

PARIS – IBM is expecting a rise in profits in 1972, according to Harry M. Sibley, treasurer, who declined to give specific figures.

IBM has budgeted a 10% rise in capital spending from last year's $1.88 billion, which would reflect an expected high volume of shipments of 370s. Last year shipments of 370s totaled about 1,350 systems, many of which occurred in the last quarter.

IBM's backlog of equipment on order at the end of 1971 dropped from last year, when it was the equivalent of $124 million in "net monthly rentals," Sibley said. Increasing shipments of 370s were responsible for the decline.

In 1970 research and development expenditures rose about 5% from 1970's $500 million, he added.



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CLOSING PRICES THURSDAY, FEBRUARY 10, 1972

SOFTWARE & EDP SERVICES

EXCH		71-72 RANGE (1)	CLOSE FEB 10 1972	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 4	1 1/8	- 1/8	-10.0
A	APPLIED DATA RES.	5- 13	7	- 1/4	-3.4
O	APPLIED LOGIC	1- 3	2 1/4	0	0.0
N	AUTOMATIC DATA PROC	44-⁻86	85 3/4	+1 1/4	+1.4
O	AUTO SCIENCES	1- 8	5/8	0	0.0
O	COMPUTER DIMENSIONS	9- 17	11	+ 1/4	+2.3
O	COMPUTER NETWORK	2- 11	6	0	0.0
N	COMPUTER SCIENCES	6- 17	9 1/4	0	0.0
O	COMPUTER TECHNOLOGY	4- 11	5 3/4	-1 1/8	-16.3
O	COMPUTER USAGE	5- 16	10 1/8	0	0.0
O	COMP AUTOMOT REPORTS	6- 13	8	+ 1/4	+3.2
N	COMPUTING & SOFTWARE	17- 45	24 3/8	-1 1/8	-4.4
O	COMRESS	1- 4	2 1/4	+ 3/8	+20.0
O	COMSHARE	4- 9	8 5/8	+1 5/8	+23.2
O	DATA AUTOMATION	1- 4	5/8	0	0.0
O	DATA PACKAGING	6- 10	8 5/8	+2 5/8	+43.7
O	DATAMATION SERVICE	1- 3	7/8	0	0.0
L	DATATAB	4- 10	7 1/8	+1 7/8	+35.7
O	EDP RESOURCES	5- 16	6 1/2	- 1/4	-3.7
A	ELECT COMP PROG	2- 7	3	0	0.0
N	ELECTRONIC DATA SYS.	34- 85	48 1/4	+2 1/8	+4.6
O	INFORMATICS	6- 15	10	- 1/4	-2.4
O	I.O.A. DATA CORP	1- 3	1	0	0.0
A	ITEL	7- 23	10 1/2	- 1/2	-4.5
O	KEANE ASSOCIATES	4- 14	6 1/2	0	0.0
O	KEYDATA CORP	5- 14	9 1/8	+1	+12.3
O	LOGICON	5- 8	7 3/4	- 1/8	-1.5
A	MANAGEMENT DATA	5- 11	8 5/8	+1	+13.1
O	NATIONAL CSS INC	7- 14	12	+1	+9.0
O	NAT COMP ANALYSTS	1- 4	1	0	0.0
P	ON LINE SYSTEMS INC	7- 18	11 7/8	+2 7/8	+31.9
N	PLANNING RESEARCH	10- 26	16 7/8	+ 1/2	+3.0
O	PROGRAMMING METHODS	16- 29	23	+ 1/4	+1.0
O	PROGRAMMING & SYS	1- 4	1 5/8	0	0.0
O	SCIENTIFIC COMPUTERS	2- 4	3 3/8	- 1/8	-3.5
O	SIMPLICITY COMPUTER	1- 4	3 1/8	+ 1/2	+19.0
O	SOFTWARE SYSTEMS	1- 3	1 3/8	- 1/8	-8.3
O	TBS COMPUTER CENTERS	4- 9	4 1/4	- 1/4	-5.5
O	TOLLEY INTL CORP	3- 8	7 1/4	- 1/8	-1.6
O	TRACOR COMPUTING	2- 5	2 1/8	0	0.0
O	TYMSHARE INC	4- 15	8 3/8	- 3/8	-4.2
O	UNITED DATA CENTER	2- 8	8 1/4	+ 1/2	+6.4
N	UNIVERSITY COMPUTING	14- 38	20 1/2	- 1/2	-2.3
A	URS SYSTEMS	5- 11	6 7/8	0	0.0
O	VORTEX CORP	2- 6	5	- 1/4	-4.7

PERIPHERALS & SUBSYSTEMS

EXCH		71-72 RANGE (1)	CLOSE FEB 10 1972	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	24- 48	40 5/8	+2 1/2	+6.5
O	ALPHANUMERIC	1- 6	1 1/4	+ 3/8	+42.8
N	AMPEX CORP	9- 25	9	-1 3/4	-16.2
O	ANDERSON JACOBSON	5- 10	6 3/8	- 1/2	-7.2
O	ATLANTIC TECHNOLOGY	3- 9	9	+1 1/2	+20.0
A	BOLT,BERANEK & NEW	4- 9	8 3/8	+ 3/8	+4.6
N	BUNKER-RAMO	6- 17	9 7/8	- 3/8	-3.6
A	CALCOMP	14- 33	24 1/8	+ 5/8	+2.6
O	COGNITRONICS	2- 9	4	-1	-20.0
O	COLORADO INSTRUMENTS	2- 8	2 1/8	- 3/8	-15.0
O	COMPUTER COMMUN.	5- 19	6	- 3/4	-11.1
A	COMPUTER EQUIPMENT	3- 7	3 5/8	- 3/8	-9.3
A	COMPUTEST	4- 20	7 1/2	- 7/8	-10.4
O	CONSOL COMPUTER LTD.	1- 12	5/8	- 1/8	-16.6
A	DATA PRODUCTS CORP	3- 10	6 1/2	+ 1/8	+1.9
O	DATA RECOGNITION	3- 8	4	- 1/4	-5.8
O	DATA TECHNOLOGY	3- 9	4 7/8	+1 3/4	+56.0
O	DI/AN CONTROLS	3- 7	3 3/4	+ 1/2	+15.3
O	DIGITRONICS	2- 8	3	- 1/8	-4.0
N	ELECTRONIC M & M	5- 16	7 3/8	0	0.0
O	FABRI-TEK	2- 4	3	- 1/8	-4.0
O	GENERAL COMPUTER SYS	6- 16	14 1/2	-1 1/2	-9.3
N	GENERAL ELECTRIC	53-124	60 3/4	- 3/4	-1.2
N	HAZELTINE CORP	6- 12	10 7/8	+ 1/4	+2.3
O	INFOREX INC	17- 49	41 1/2	-2 1/2	-5.6
O	INFORMATION DISPLAYS	3- 8	3 7/8	- 1/8	-3.1
O	MANAGEMENT ASSIST	1- 2	7/8	0	0.0
A	MARSHALL INDUSTRIES	7- 27	11 1/4	- 1/4	-2.1
N	MEMOREX	20- 78	33 7/8	-2 3/4	-7.5
A	MILGO ELECTRONICS	12- 27	27	+2 1/2	+10.2
N	MOHAWK DATA SCI	15- 47	19 1/2	-2 3/4	-12.3
O	OPTICAL SCANNING	6- 18	10 3/4	+2 1/4	+26.4
O	PERTEC CORP	9- 18	16 1/4	-1	-5.7
O	PHOTON	6- 14	12 3/4	+1 1/2	+13.3
A	POTTER INSTRUMENT	11- 25	18 5/8	- 1/2	-2.6
O	PRECISION INST.	7- 16	11 1/2	+ 3/4	+6.9
O	RECOGNITION EQUIP	9- 26	13 1/8	0	0.0
O	REDCOR CORP.	1- 9	3/8	0	0.0
N	SANDERS ASSOCIATES	9- 22	19 3/8	+ 3/4	+4.0
O	SCAN DATA	6- 15	11 1/4	- 3/8	-3.2
O	SYCOR INC	3- 11	7 1/2	0	0.0
O	TALLY CORP.	6- 16	11 1/4	-1 3/8	-10.8
N	TEKTRONIX INC	28- 44	36 3/8	+ 3/8	+1.0
N	TELEX	8- 22	12 1/2	-1	-7.4

SUPPLIES & ACCESSORIES

EXCH		71-72 RANGE (1)	CLOSE FEB 10 1972	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADAMS-MILLIS CORP	9- 19	12	- 1/4	-2.0
O	BALTIMORE BUS FORMS	6- 10	7 1/2	+ 1/4	+3.4
A	BARRY WRIGHT	7- 13	12 1/4	+ 3/4	+6.5
A	DATA DOCUMENTS	14- 29	22 3/8	+ 3/8	+1.7
O	DUPLEX PRODUCTS INC	8- 14	13 5/8	0	0.0
N	ENNIS BUS. FORMS	5- 13	8 1/2	+ 1/2	+6.2
O	GRAHAM MAGNETICS	9- 35	22 3/4	+1 1/2	+7.0
O	GRAPHIC CONTROLS	6- 15	12 5/8	- 1/8	-0.9
N	3M COMPANY	96-139	138 3/8	- 3/8	-0.2
O	MOORE BUS. FORMS	36- 47	47	+1 1/4	+2.7
N	NASHUA CORP	29- 54	54	+ 7/8	+1.6
O	REYNOLDS & REYNOLD	37- 74	73 1/2	+2 1/2	+3.5
O	STANDARD REGISTER	14- 23	18 5/8	+1	+5.6
O	TAB PRODUCTS CO	8- 17	16	- 3/4	-4.4
N	UARCO	23- 34	27 1/4	+ 3/4	+2.8
A	WABASH MAGNETICS	5- 10	9	+ 3/8	+4.3
N	WALLACE BUS FORMS	18- 26	24 1/2	- 1/8	-0.5

COMPUTER SYSTEMS

EXCH		71-72 RANGE (1)	CLOSE FEB 10 1972	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	105-160	157 1/8	+1 5/8	+1.0
N	COLLINS RADIO	10- 20	17 5/8	0	0.0
N	CONTROL DATA CORP	34- 83	56	+ 1/2	+0.9
O	DATA GENERAL CORP	19- 68	67 1/2	+ 1/2	+0.7
O	DIGITAL COMP CONTROL	4- 24	23	-1	-4.1
N	DIGITAL EQUIPMENT	53- 92	88 3/4	-3	-3.2
N	ELECTRONIC ASSOC.	5- 9	7 5/8	+ 1/4	+3.3
A	ELECTRONIC ENGINEER.	5- 13	12 3/4	+1 3/8	+12.0
N	FOXBORO	25- 46	35 7/8	-1 5/8	-4.3
O	GENERAL AUTOMATION	9- 26	24 1/2	+3 1/2	+16.6
N	HEWLETT-PACKARD CO	30- 53	52 1/2	+1 5/8	+3.1
N	HONEYWELL INC	83-155	155	+6 3/4	+4.5
N	IBM	284-374	372	-1 1/4	-0.3
O	INTERDATA INC	6- 11	10 3/4	+ 1/4	+2.3
N	NCR	25- 49	33 1/4	+ 1/4	+0.7
N	RAYTHEON CO	27- 46	44 3/4	- 3/8	-0.8
N	SPERRY RAND	23- 38	36 5/8	+ 3/8	+1.0
A	SYSTEMS ENG. LABS	7- 18	13 1/8	+ 3/8	+2.9
N	VARIAN ASSOCIATES	11- 18	16 7/8	+1 1/2	+9.7
N	VICTOR COMPTOMETER	12- 27	16 1/8	- 5/8	-3.7
N	WANG LABS.	29- 50	40	+1 1/2	+3.8
N	XEROX CORP	85-134	133 3/4	+5 1/2	+4.2

LEASING COMPANIES

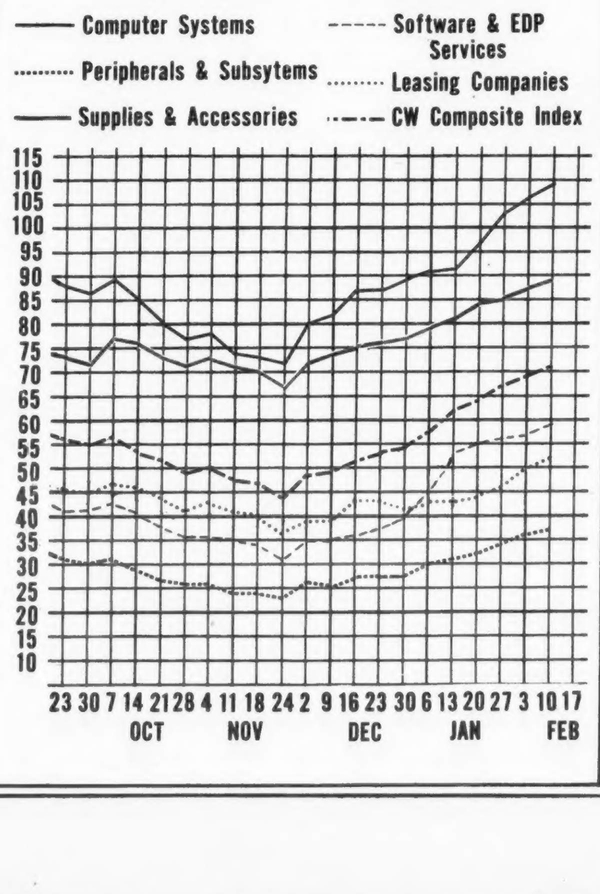
EXCH		71-72 RANGE (1)	CLOSE FEB 10 1972	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	11- 27	15 1/2	-1 3/8	-8.1
O	BRESNAHAN COMP.	2- 4	2 7/8	- 1/8	-4.1
O	COMPUTER EXCHANGE	1- 9	1 3/4	- 3/8	-17.6
A	COMPUTER INVSTRS GRP	7- 14	9 5/8	- 3/8	-3.7
N	DPF INC	8- 19	11 1/2	0	0.0
O	DATRONIC RENTAL	2- 4	3 7/8	0	0.0
A	DCL INC	5- 13	10	+ 7/8	+9.5
A	DEARBORN-STORM	12- 23	21 7/8	+1 3/8	+6.7
A	DPA, INC.	4- 9	5 1/4	- 1/8	-2.3
A	GRANITE MGT	7- 13	9	- 3/4	-7.6
A	GREYHOUND COMPUTER	7- 11	10	- 1/8	-1.2
N	LEASCO CORP	16- 26	22122h	- 5/8	-2.7
O	LECTRO MGT INC	2- 5	2 3/8	- 1/8	-5.0
O	NCC INDUSTRIES	3- 10	9 1/4	- 1/4	-2.6
A	ROCKWOOD COMPUTER	3- 9	6	+1 1/8	+23.0
O	SYSTEMS CAPITAL	3- 7	6 3/8	+2 3/8	+59.3
N	U.S. LEASING	16- 44	43 1/2	+1 1/4	+2.9

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID

(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

AUTOMATIC DATA PROCESSING

Six Months Ended Dec. 31

	1971	1970
aShr Ernd	$.47	$.36
Revenue	28,610,178	22,198,136
Earnings	2,660,513	1,956,981

a-On a fully diluted basis, per-share earnings were 46 cents in 1971 and 35 cents in 1970.

BURROUGHS

Year Ended Dec. 31

	1971	1970
Shr Ernd	$4.03	$3.83
Revenue	943,276,000	893,434,000
Earnings	74,151,000	66,542,000
3 Mo Shr	1.82	1.69
Revenue	294,615,000	273,840,000
Earnings	33,603,000	29,658,000

DATA CONTROL SYSTEMS

Three Months Ended Dec. 31

	1971	1970
Shr Ernd	$.05	.....
Revenue	1,529,000	$1,070,000
Earnings (Loss)	44,000	a(340,000)

a-Restated.

DATA DOCUMENTS

Three Months Ended Dec. 31

	1971	1970
aShr Ernd	$.42	$.25
Revenue	6,610,177	6,277,119
Tax Cred	13,807	11,399
bEarnings	211,166	131,013

a-Based on income before tax credit. b-Equal to 45 cents a share in 1971 and 28 cents a share in 1970.

DELTA DATA

Three Months Ended Sept. 26

	1971	1970
Revenue	$250,503	$137,199
Loss	131,266	433,886
6 Mo Rev	805,805	304,689
Loss	120,755	900,390

HEWLETT-PACKARD

Year Ended Oct. 31

	a1971	a1970
Shr Ernd	b$.88	$.92
Revenue	375,088,000	363,593,000
Spec Cred	c1,101,000	.....
Earnings	e23,881,000	23,507,000

a-Restated for accounting change. b-Based on income before special credit. c-Gain on translation of foreign currencies. e-Equal to 92 cents a share.

OPTICAL SCANNING

Three Months Ended Sept. 30

	1971	a1970
Revenue	$2,204,993	$1,935,072
Loss	501,895	9,372,139

a-Restated to reflect changes in accounting methods for leased equipment sold to a third-party lessor.

SPERRY RAND

Three Months Ended Dec 31.

	1971 (000)	1970 (000)
Shr Ernd	$.44	$.51
Revenue	453,935	434,795
Earnings	15,036	17,336
9 Mo Shr	1.08	1.51
Revenue	1,274,146	1,271,357
Earnings	36,953	51,583

WANG LABORATORIES

Three Months Ended Dec. 31

	1971	1970
Shr Ernd	$.14	$.19
Revenue	8,505,654	8,745,714
Earnings	555,721	772,282
6 Mo Shr	.28	.37
Revenue	16,358,808	16,493,726
Earnings	1,113,716	1,484,741


Hazeltine
2000